

MONITORS

GH Budget 14" Multisync Monitor (28)	£189
GH 15" Multisync Monitor (28)	£239
Apple 14" MultiScan (28)	£225
Apple 15" Multisync (28)	£249
Apple 15" AV Multisync (28)	£499
Apple 17" 1705 Multisync (26)	£659
Apple 17" 1710 TCO Trinitron MultiScan (26)	£729
Apple 20" Trinitron MultiScan II (26)	£1199
NEC 15" Cromaclear Multisync (25)	£399
Mitsubishi 17" Diamondtron Multisync (26)	£499
Mitsubishi 21" Diamondtron Multisync (30)	£999
Sony 15" SX1 Trinitron Multisync (26)	£299
Sony 15" SF2 Trinitron Multisync (26)	£339
Sony 17" SF2 Trinitron Multisync (26)	£519
Sony 17" SE2 Trinitron Multisync (26)	£779
Sony 20" SF2 Trinitron Multisync (26)	£1099
Formac 17" Trinitron Multisync (26)	£469
Formac 17" Trinitron Multisync - HiSpec (26)	£539

GH Prices INCLUDE Adaptors for non Apple Monitors FREE!
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to give your monitor higher resolutions, more colours etc.

KEYBOARDS

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Apple Design Keyboard	£59
Apple Extended Keyboard	£89
Apple Adjustable Keyboard	£139

PRINTERS

Apple Personal Laser 300 - 300dpi Mono	£415
Apple Laser 4/600PS - 600 dpi Mono	£579
Apple LaserWriter 12/640PS	£1079
Apple Laser 16/600 - 600 dpi Mono	£1399
Apple LaserWriter 12/600PS Colour	£4049
HP LaserJet 6MP - 600 dpi Mono, 3Mb RAM, 8ppm With both Parallel and Local Talk Connections	£649

Apple StyleWriter 1500 Colour 720 x 360dpi	£269
Apple StyleWriter 2200 Colour 720 x 360dpi	£269
Apple StyleWriter 2500 Colour 720 x 360dpi	£269
Apple StyleWriter EtherTalk Kit	£145
Canon BJC4550 Colour - A3 Mac or Amiga	£309
Epson Stylus Colour 500 720 x 720dpi	£209
Epson Stylus Pro 400 A3 720 x 720dpi	£314
Epson Stylus Pro XL+ Colour - A3 720 x 720dpi	£829
Epson Stylus Pro POSTSCRIPT RIP	£175
HP 600 DeskWriter Mono 600 x 300dpi	£149
HP 660C DeskWriter Colour 600 x 300dpi	£229
HP 870C DeskWriter Colour 600 x 600dpi	£329
Tektronix Phaser 140 A4 Colour, Postscript, 8Mb	£999

PowerPrint Use parallel printers with Macs	£79
StyleScript Adobe PS RIP for Apple Colour SWs	£75

PRINTER CONSUMABLES

StyleWriter... I/II Port/1200/1500... Black Cartridge	£13.99
StyleWriter 1500 Colour Cartridge	£23
StyleWriter 2500 Photographic Ink Cartridge	£47
StyleWriter 2500 Premier Plus Paper Photographic Ink Cartridge	£29
StyleWriter 2400/2500 Black Cartridge	£26
StyleWriter 2400/2500 Colour Cartridge	£33
StyleWriter 2400/2500 Black Ink Tank	£7
StyleWriter 2400/2500 Colour Ink Tank	£13
Colour StyleWriter Pro Black Hi-Capacity C, M, or Y Cartridge (ea.)	£10.99
CMYK - 4 colour set Cart.	£38
Epson Stylus 500 Black Cartridge	£15
Epson Stylus 500 Colour Cartridge	£24
Epson Stylus II Black Cartridge	£14
Epson Stylus II Colour Cartridge	£20
Epson Stylus A4 Paper 360dpi Paper, 100 Sheets	£12
720dpi Paper, 100 Sheets	£16
Transfer Paper, 10 Sheets	£13

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Genuine Apple Toner Cartridges...	
For Apple LaserWriter LC, SC, NTR	£55
For Apple LaserWriter 300, 320, 4/600	£45
For Apple LaserWriter 360	£69
For Apple LaserWriter 16/600	£85
For Apple LaserWriter 12/640	£89
Please call for Colour LaserWriter Accessories	£CALL

CD ROM DRIVES

D2 CD 600e Quad Speed inc. Cables*	£164
D2 CD 1200e Eight Speed inc. Cables*	£189
Apple CD 600i Plus Internal Quad Speed (Requires fitting kit - please call for details/prices)	£189
Panasonic Double Speed inc. Cables*	£89
(*Standard Cables for Desktop Macs, call for PowerBooks*)	
Microtek CD1200e Inc. 5 Titles	£209

SCANNERS

Apple Color One 600-27 Scanner	£349
Apple Color One 1200-30 Scanner	£549
U M A X	
Model Photoshop Trans Adap Price	
VISTA S6e	£219
VISTA S6e LE	£239
VISTA S6e FULL	£649
VISTA S12	£399
VISTA S12 LE	£419
VISTA S12 FULL	£519
VISTA S12 FULL	£844
UMAX Vista Transparency Adaptor	£329
TextBridge bought with any Umax scanner	£39

A G F A

Model Software Trans Adap Price	
SnapScan Colorit/Omnipage	£249
StudioScan IISi Photoshop LE	£439
StudioScan IISi Photoshop FULL	£499
StudioStar Photoshop LE/Omnipage	£559

E P S O N

Model Photoshop TextBridge Price	
GT 5000 LE	£279
GT 8500 LE	£449
GT 8500 FULL	£549
GT 9500 LE	£579
GT 9500 FULL	£689
Epson Transparency Adaptor (except 9500)	£399

P A P E R P O R T

Visioneer PaperPort VX (inc. WordScan OCR SW)	£239
FREE SCSI ADAPTOR WITH ALL VISIONER PAPERPORT VX MODELS WORTH... £49.00	
SCSI Adaptor for PaperPort VX	£49
4 Port Juggler for PaperPort/Modems	£89

C A M E R A S

Casio QV-10 Digital - 320x240	£319
Casio QV-10 Digital - 640x480	£449
Apple QuickTake 150 inc. Mac/PC Kit	£419
QuickTake 100 to 150 Upgrade Lens	£13
Kodak DC25 Digital 1Mb	£199
Kodak DC25 Digital 2Mb, PCMCIA, LCD	£319
Kodak DC40 Digital 4Mb, Flash, 99 Images	£419
Kodak DC50 Digital 1Mb, PCMCIA, 3 x Zoom	£599
Connectix QuickCam	£79
Connectix QuickCam Colour	£159

S T O R A G E

D2, Quantum, 1.2Gb Internal Hard Drive	£229
D2, Quantum, 1.2Gb Internal Hard Drive	£299
D2, Quantum, 4.0Gb Internal HD (Atlas AV)	£775
D2, Quantum, 1.2Gb External Hard Drive	£279
D2, Quantum, 1.2Gb External Hard Drive	£339
EZ135 Cartridge	£14
EZ230 Drive - inc. Cartridge & Cable	£199
EZ230 Cartridge	£20
EZ230 Cartridge, 6 PACK	£108
IOMEGA 100Mb ZIP Drive - inc. Cartridge & Cable	£125
ZIP Cartridge - 100Mb	£11
ZIP Cartridges - 100Mb, 6 PACK	£54
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IOMEGA JAZ Drive inc. Cartridge & Cable	£469
JAZ Cartridge - 1Gb	£65
JAZ Cartridges - 1Gb, 3 PACK	£189
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Syquest Cartridge - 44Mb	£28
Syquest Cartridge - 88Mb	£30
Syquest Cartridge - 200Mb	£45
Syquest Cartridge - 270Mb	£34
D2 230Mb Optical Drive - inc. Cartridge	£399
Optical Disk - 230Mb	£20
Pinnacle 2.6Gb Optical Drive inc. Cartridge & Cable	£849
SONY CD WRITER Double Speed - Write, Quad Speed Read including Toast or Gear Software	£499
YAMAHA CD WRITER Quad Speed - Write, Quad Speed Read including Toast or Gear Software	£649
PINNACLE RCD 5040 CD WRITER inc. Software	£649

WACOM TABLETS

Artpad II... £109	Artpad II with Dabblar... £150
Ultra Pad... A5 - £255, A4 - £355, A3 - £555	

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Apple Personal COMMS Solution - 14.4 £109 28.8 £179	
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Lasat Safire - 28.8	£139
US Robotics Sportster 28.8 V34	£149
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Global Village TelePort Platinum - 28.8 BAST	£129
Global Village PowerPort Gold PCMCIA 14.4 BAST	£189
Global Village PowerPort Platinum PCMCIA 28.8 BAST	£239
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Memory Prices Fluctuate Daily, Call GH FIRST!!!	

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Corel Draw Suite - Word Perfect	£279
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Quark Xpress 3	£649
Adobe Illustrator 3.0	£279
Adobe Photoshop 3.0	£399
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KPT Power Photos 1, 2 or 3	£95
KPT Converter	£95
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Macally Mouse	£17
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NEWTON

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GoFigure	£24
Berlitz 5 Language (PCMCIA)	£70
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Equate	£61
Press for Mac	£32
Notion (The List Manager)	£55
TapWorks	£71
PocketCall	£48
Accountable	£88
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Action Names/Agenda 3.0	£35
Time Reporter	£69
Quick Figure Pro	£43
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- Apple Newton Centre

Standard Warranty, normal cover is comprehensive but we also offer enhanced and extended warranties too. If your Mac is an essential part of your business, you may require a full collection or on-site response service for minimal down time. Ask for details and choose the option that suits your needs best.

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We are often told our showroom is the best in the UK. So why not visit us in scenic Derbyshire and see for yourself the vast range we have on display, all at mail order prices, off the shelf!

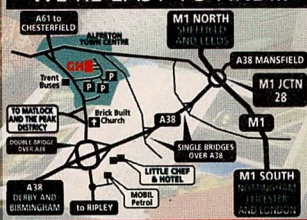
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MACFORMAT

ISSUE 46 ■ JANUARY 1997

The Finder

Reviews A-Z

Your index to products reviewed in this issue

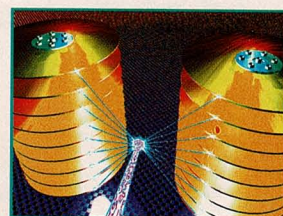
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Among PowerBooks, only the new 1400 has a built-in CD-ROM drive, but you can still enjoy CDs if you own an older portable Mac. We test the Sony Discman, page 81.



Can Fractal Detailer add class to your 3D models? Page 86.



How to create a super-fast hard disk array – page 51.

Buyer's Guide



The Chooser

121

Packed out! 20 pages of great buying advice, hot product news, and, above all, dozens of the best Mac products to help you choose wisely.



Free Reader Ads

142

Pick up the best bargains in our Mac marketplace. Software, hardware and everything in between!

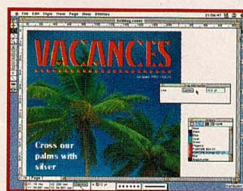
Win! Win! Win!

Win a year's subscription to the JFAX Personal Telecom service 146



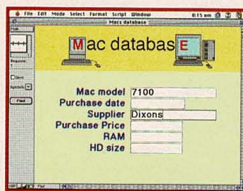
The virtual office is here! Say goodbye to your fax machine and open an "office" in NY – JFAX enables you to receive faxes and voicemail via your e-mail connection. We have five JFAX subscriptions, worth over £500, to be won!

How to...



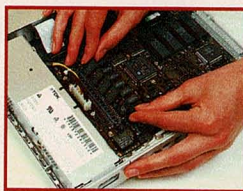
Control trapping 57

QuarkXPress gives you all the tools you need to customise colour trapping – here's a step-by-step guide to how to make sure your printed output has perfect, well-defined colours every time.



FileMaker Pro 3 60

Our step-by-step guide shows you how to search and sort your data with speed and accuracy, using the Find function. All the files you need are on the Cover CD.



MacAnswers 62

Your questions answered in our problem-solving pages: the joy of type 11 errors and "missing" FPU's; take a trip to SIMM City; and the truth about Virtual Memory and RAM Doubler. Plus: the definitive software installation guide.

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Everything you wanted to know about MACFORMAT but were afraid to ask.



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The Mac sites that help you to see into the future.



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All the latest news from the Mac scene: QuickTime is set to expand its repertoire, becoming a true multimedia player; Apple forges global links as it seeks help for Mac OS 8; and Apple is set to open its own Internet cafés.

What's New: product news 20

Find out all the latest from the recent Apple Expo show. Cinema 4D and Poser 2 offer advanced tools for 3D modelling and animation; and check out the world of digital input.



Apple Talk: letters 24

Your chance to speak out about the Mac issues that concern you, plus Silly Things Your Mac Says.



Subscribe to MACFORMAT 115

Make sure you never miss another issue of MACFORMAT!

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If you did miss an issue, here's how to complete the set!

Next Issue 145

Be patient: there's just four weeks to wait for the next one.



MACFORMAT Reader Awards

Favourite products of 1996 revealed on page 28

We asked you to nominate your favourite products of the year – the finest business, creative and leisure hardware and software. This issue we unveil the winners in the biggest test a product can face – gaining approval from the people who use the Mac every day.



Mac '97

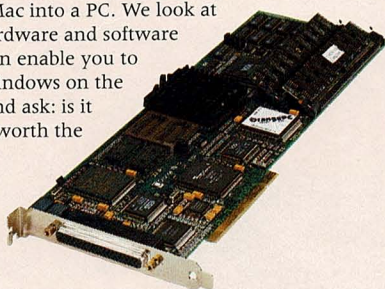
The trends of the year page 42

Next year the Mac is set for the biggest upheaval since it was first launched – you won't recognise your favourite computer by this time next year. But why are the changes happening, and what's making it possible? We make sense of the trends and technologies which promise to make the next 12 months unforgettable.

PC on the Mac

PC emulators tested page 72

When even the Mac can't provide the software you need, you can gain extra options by turning your Mac into a PC. We look at the hardware and software that can enable you to run Windows on the Mac and ask: is it really worth the effort?



Actua Soccer

Football on the Mac! page 106

At last: footy comes to the Mac with this arcade-style recreation of the beautiful game. But will *Actua Soccer* reward your patience with a Premier League game, or is it simply the equivalent of a Division Three match on a rainy Sunday?



MACFORMAT Cover Disc

MACFORMAT is available in your choice of a CD-ROM or a high-density floppy disk edition every issue:



This logo in the mag means programs on the CD.

Your Cover CD-ROM 8

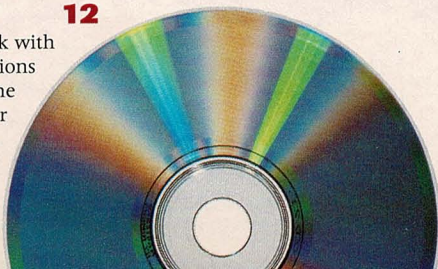
Over 600Mb! Fantastic demos of *Actua Soccer*, *Marathon Infinity*, *ClickWorks* and *MediaPaint*. Plus: Your chance to try out some Reader Awards winners; *Internet Explorer 3.0*; *HyperStudio 3.0*; and Jonni Starr, MACFORMAT's own cartoon serial. Also, essential System extras and over 100Mb of the very latest shareware from the Internet, plus everything below...



Create your own multimedia with *MediaPaint* and our Cover CD.

Your Cover Disk 12

Keep track of every file on every disk with *DiskList* and switch between applications with ease using *Malph*. Plus: relive the classic arcade game *Pacman*, test your wits in *RChess 2.2.2* and even more...



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Ever had to run PC applications and games on your Mac? One of these could be the answer.

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Four CDs on tap at the same time – a novel idea, but is it worth it? Find out for yourself.

Sony CD-ROM Discman 81

You can have CD-ROMs on the move with this neat and compact gadget.

Performance Direct 4Gb AV drive 82

Bring an end to all your storage woes.

MACcelerate 180 PowerPC upgrade board 84

Live life in the fast lane – this board comes with a promise of speed and power.



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Fractal Design Detailer 86

"Paint" textures onto 3D images with this powerful and distinctive new graphics package.

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Shareware Central 116

The latest low-cost and no-cost software, including a special look at organisers.

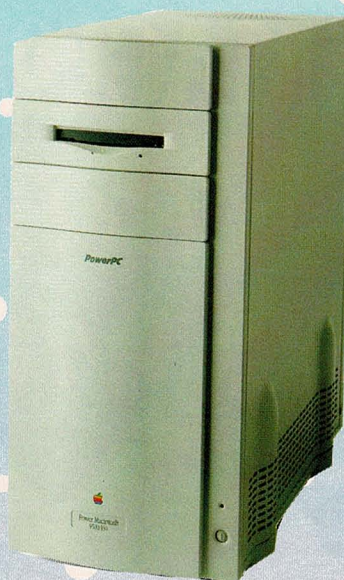
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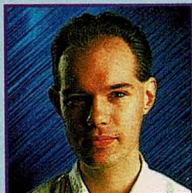
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Welcome to MACFORMAT

Everything you wanted to know about MACFORMAT, plus what we see as the products of the year in 1997...

About our writers



Richard Hill

Our News Editor explores the trends on page 42. His tip: big changes like the PowerPC Platform will grab the headlines, but new Apple "info management" technologies could be just as far-reaching – an improved Find File, V-Twin searching, Apple Data Detectives and, through OpenDoc, the merging of the Desktop and the Internet. Together it'll mean you'll never think of pieces of information in the same way again.



Lindsay Bruce

Our Technical Writer says: "A transparent computer would be cool. No, not one with a perspex case, but one you can use without any of the clumsy conventional things like keyboard or mouse. A computer that reads your thoughts and reflects your moods. That way, you could manipulate data by just thinking about it, and you'd have the perfect companion. Of course, if I had a girlfriend, I wouldn't be as sad as this..."



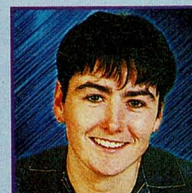
Derek Smith

Our technical expert and roving company troubleshooter knows all the dark secrets of our Macs and the limitations of the technology. He looks forward to the next version of *FileMaker Pro*, rumoured to be named *FileMaker Really Pro This Time 1*. That or a virtual reality helmet that doesn't make you look like the sort of dork who would wear a virtual reality helmet.



Rod Lawton

Our "productivity software" specialist is (not very secretly) a *HyperCard* expert too, and he's thrilled at the news that QuickTime Interactive, the next generation of Apple's video player system, will be able to handle sound and animation as well, because it means that *HyperCard* will be reborn as the complete Desktop multimedia creator it always promised to be.



Tess Moran

Our acting Disc Editor is still wondering what she's got into and says: "My life revolves around inconveniences, so the killer product for me would be anything that could get me to the train station without a ticket, make my tea for me and get the pints in down the local. Either that or revamped versions of promising stuff that didn't quite 'make it', like new PowerMac clones, Kai Krause's Amazon, and the Labour Party."



Ian Waugh

Our music specialist predicts that the product of 1997 will be the 500MHz Mac due at the end of '97. But top of his wish list has to be cheaper, even more powerful Macs to whack the PC market. Or maybe just built-in upgradeability rather than built-in obsolescence, so we can buy with confidence that we can upgrade – cheaply! – to the latest Mac when it appears, as they invariably do, six months down the line.



Alex Summersby

Editor

Welcome again to MACFORMAT, Britain's best-selling Macintosh (and Mac-compatible!) magazine.

It's been a real roller-coaster ride for Apple and for Mac enthusiasts this last year, but when you look back on it one thing does become clear: whatever Apple was going through as a company, its products and its technologies went from strength to strength. With new developers queueing to sign up to the Mac platform even while the company's financial prospects looked bleakest, with ever more breathtaking new hardware and software appearing all the while, you just knew the Mac had a secure future.

This issue we look forward to what that future might bring, at least over the next 12 months, and help make sense of all those buzzwords you might have been hearing around the place.

At the same time, we're also celebrating the best of the past 12 months in the MACFORMAT Reader Awards – the awards which give a voice to the people who matter most, the people who buy and use Macs and Mac products.

And, of course, we're testing more new products and bringing you reviews you can trust – genuine reviews of products you can actually buy, designed with one aim: to help you decide whether they're worth your money or not.

1997 promises to be another year of sweeping change in the Mac market. But whatever 1997 might bring, however wild the roller-coaster, do come along for the ride and live the future as it happens.

About MACFORMAT

MACFORMAT is for you, the person who actually works at a Macintosh keyboard. Every issue we bring you:

■ **Tips, techniques and tutorials** covering the range of Mac applications, from graphics, spreadsheets and databases to music, multimedia and games.

■ **Features** about exciting Mac developments and novel uses, accompanied by software on our Cover CD-ROM and floppy disk whenever possible, so you can discover what your machine can do and try things you mightn't have tried before.

■ **All the latest Mac-related news**, plus all you want to know about the wider issues, the people behind the headlines and the stories behind the stories.

■ **Authoritative, independent reviews** of interesting and affordable products, with clear buying recommendations.

■ **Cover Disks and CD-ROMs** with demos so you can try software for yourself before you buy, useful utilities (specially chosen to complement features in the magazine), selected shareware programs, games, readers' contributions and much more.

Whether you're a veteran or a novice, MACFORMAT will help you get more out of your Macintosh, whatever you use it for.

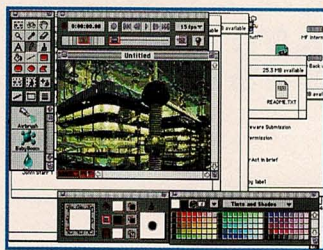
A word about prices...

We try to ensure that all prices quoted in editorial pages in MACFORMAT are accurate at the time of going to press, and they all include UK Value Added Tax at 17.5%. However, this may not necessarily be the case with prices appearing in advertisements, so we recommend that you always contact advertisers before ordering to confirm prices and availability.

■ We make every effort to verify all the information we publish, but products and prices do change. We always quote list prices (RRPs), but street prices vary. Shop around, and check with the supplier before buying to make sure that the product you're considering will meet your needs. MACFORMAT cannot accept responsibility for any errors or omissions or for any losses that

may arise as a result, but it is our policy to correct any errors of fact whenever we can.

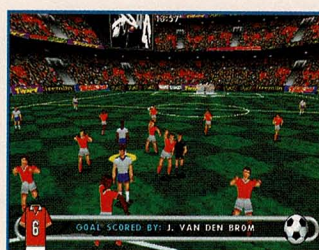
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MediaPaint



ClickWorks



Actua Soccer



Picasso

Your CD-ROM

This month's CD is bursting with flavour – in the hotpot are some cordon bleu applications and demos, plus some sizzling games and shareware. Head chef is Tess Moran. Aprons on...

Getting started

Welcome to the MACFORMAT 46 Cover CD. Here are some tips:

■ Some of the demos on the Cover CD require installation on your hard disk – they won't run direct from the CD. Many of these programs use an installer: once you've double-clicked on it, just follow the on-screen instructions and you should be fine. Even if there's no installer, it often helps to copy demos to your hard disk – at the very least they should run faster!

■ The icons we use on the CD folders help to give it a friendly atmosphere, but they do slow it down. Install **CDIconKiller**, which is in the **Resources** folder on the CD, if you want to speed things up.

■ If you have problems quitting any of the rolling demos on the CD, just press **[command] Q** and you should go back to the Finder. If this doesn't work, hit **[command] [option] [escape]** to Force Quit.

■ It couldn't be easier to install System Extensions and Control Panels – just drag them over your closed System Folder and your Mac puts them in the right place for you. Then all you need to do is **Restart**.

■ Look for this icon throughout the issue – it will point you towards the CD contents connected with the feature or review you're reading.



Media Paint

What is it? Save disabled demo

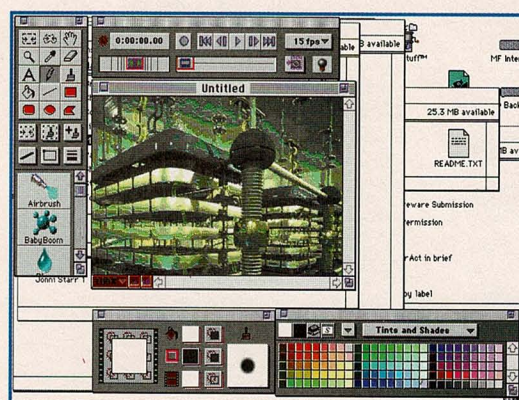
Where you'll find it: Demos folder
Mac: 68030

PowerMac: Any

Requires: System 7.1, 12Mb RAM

Director meets *Photoshop* in this new innovative all-in-one video editing package from Strata – and this impressive package can hardly put a foot wrong. With just a few clicks you can create original, fully functional movies to impress your friends with.

Easy to pick up and with a great interface which is both simple and colourful, *MediaPaint* is an exceptionally good special effects application. Essentially it works in a similar way to *Photoshop* but with the added bonus of multimedia capabilities – which makes this package a must for all aspiring movie makers! You can create video effects including laser blasts and ghosted imagery, and add



Oliver Stone probably learnt all he knows from this package, so get creating and let the budding film director in you shine.

video-on-video effects, all at the click of a mouse.

To get a feel for what *MediaPaint* can do, follow these simple steps to create a short movie:

1. Select **New** from the **File** menu after opening.
2. Select **White** as background colour (using the top small square

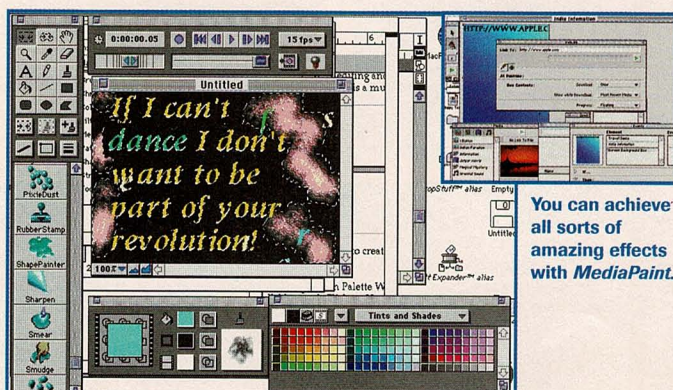
on **Palette Windows**).

3. Select **ShapePainting** from the lower scrollable panel. Click on **Untitled** ten times (making sure you position them in the same place each time.)
4. Pull back **Square Play Indicator**, then simply click on the **Play** button.

This is only a fraction of what you can achieve in *MediaPaint*. There are a few example files that Strata has thrown in for you to take a look at. These are best opened from within the package itself. Take a look at these and then get busy clicking, creating, playing and creating and you'll soon be snapped up by Warner Brothers... Perhaps.

To Install

Copy the **MediaPaint Demo** folder to your hard drive and double-click the **MediaPaint Demo** application.



You can achieve all sorts of amazing effects with *MediaPaint*.



ClickWorks

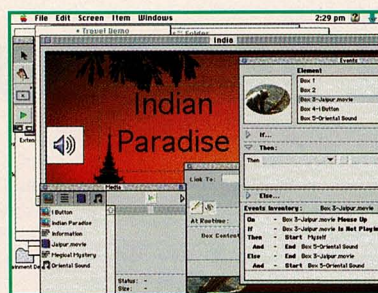
What is it? Save disabled demo
Where you'll find it: Demos folder
Mac: PowerMac only
PowerMac: Any
Requires: System 7.0 or higher,
 30MB free hard disk space

This new package is a highly professional multimedia authoring tool with the 20th century firmly in mind, including up-to-the-minute features like WebLink.

All the best features of a mainstream DTP package are here in *ClickWorks*, but with the added bonus of sound and movement thrown in. In a nutshell, the idea is to create a series of interconnected

screens which will form the basis of your presentation – you do this by using the **Presentation Editor**.

Sophistication is the name of the game with *ClickWorks*, which not only supports images and sound, but also Web links, e-mail, FTP and newsgroups. To get started, open up a new page in the **File** menu, select the screen icon from the vertical **Icon Panel** and click on the empty page. A screen will automatically be placed on your page. In order to edit this box, you have to double-click to open and select the half-hand icon from the **Menu Panel**. This enables you



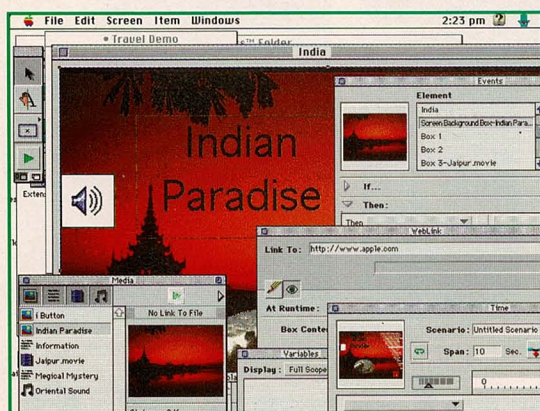
Get click-crazy with *ClickWorks* and create stunning documents that will help you win friends and influence people. Maybe.

to create text within the box. Once you've done this, you can close the box and repeat with a new screen. You can connect the two screens by selecting the **Link** key in the **Menu Panel**. Experiment with the other tools to see what they do, or use the on-line help system. It's a bit heavy going at first with its link-dependency system, but once you grasp this you'll find that this is a complex and intelligent package made much simpler by good design.

■ **Important:** before trying to use this demo, you should move both *Adobe Type Manager* and *RAM Doubler* out of your Extensions folder and restart your Mac. And note, the demo CD version of *ClickWorks* does not allow you to save titles or use *Player for Windows*.

To Install

Double-click on the installer and save to your hard disk.



Connect screens to form the foundation of your presentation. *ClickWorks* has many options to choose from, enabling you to create stylish images.

Actua Soccer

What is it? Part-interactive demo
Where you'll find it: Demos folder
Mac: PowerMac only
PowerMac: Any
Requires: System 7.5.3, 8Mb RAM,
 22Mb hard disk space, colour monitor

This semi-interactive demo of the addictive new football title for the Mac is a great taster of what's in store if you buy the game (it's reviewed on page 106). If you try to forget that the maker has called the game "soccer" and not "football", then it's really quite enjoyable.

You can see all the main controls, clicking buttons to find out what options are available, and footy fans everywhere will be glad to note that there's a virtual replay of the England vs Scotland game – only this time Gascoigne has no say in the matter. His split loyalties and the fate of the game all now reside in the hands of the maker, Gremlin, so check it out and see how the

arch-rivals fare second time round.

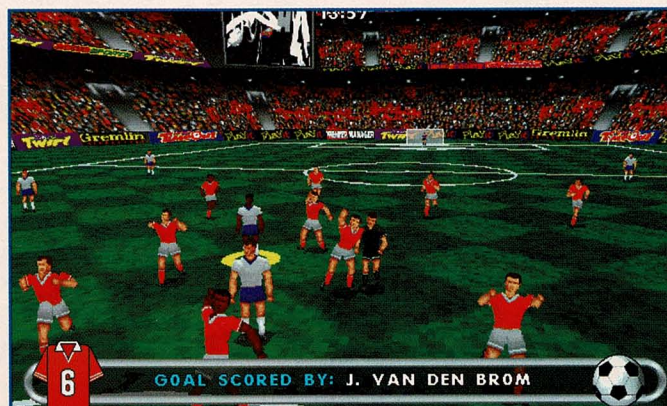
Also on the CD

Marathon Infinity and *Descent 2* are 3D shoot-'em-ups, while *A-10 Cuba* is a flight sim involving fighter attacks on Cuba. Hmm... an American product by any chance?



Check out the options available on the full version of *Actua Soccer*.

Post-goal euphoria in this shot from the full version. All together: "There's only one J van den Brom..."



CD Index

Use this folder-by-folder guide to what's on the Cover CD this issue and just where you'll find it.

Demos

A-10 Cuba
 Actua Soccer
 ClickWorks
 Descent 2
 Digital Audio:
 Interpreter
 Sample Search 1.988
 TurboMorph 1.52
 Magritte
 Marathon Infinity
 MediaPaint
 Microsoft Office
 Picasso
 PowerFantasm 4.15

Reader Awards

Bryce 2 Demo
 ClarisWorks 4.0 Trial
 Director 5 demo



Discover the action-packed thrills that have made *Marathon 2* a readers' favourite.

GraphicConverter 2.5
 Marathon 2 demo

Internet Explorer 3.0

The latest version of Microsoft's Web browser, including *Internet Mail and News*, giving you access to e-mail and newsgroups.

MACFORMAT 46 Floppy

Get organised with the fantastic catalogue *DiskList*; save time with *Malph*, the switching and launching utility; and get to grips with two very different games – classic arcade game *Pacman* and *RChess*. All this *plus* loads of handy utilities. See page 12 for more details.

HyperStudio Preview

Try out the easy-to-use multimedia authoring package with this demo.

JFAX Personal Telecom

Get your faxes and voicemail over the Internet when you want them! Here's the complete *JFAX Communicator* software, with sample files and details of how to join the JFAX service. To sign up at our special discount rate, follow the instructions included and quote the special code **MF0197**. And for a chance to win a year's free JFAX account, see page 146. ➤



CD Index (continued)

Jonni Starr 1

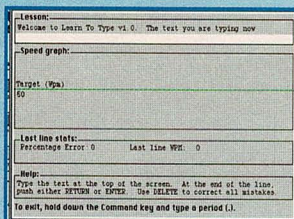
The exciting first instalment in our exclusive new cartoon series.

FileMaker Pro 3.0 Tutorial

All the software and data files you need to accompany our *FileMaker Pro 3* tutorial, starting on page 60.

Resources

Acrobat Installer 2.1
CDIconKiller 1.3.3
Disinfectant
DOCMaker SW v4.7
GraphicConverter 2.5
MacFormat CD Index
NewsWatcher
QuickTime 2.5
ResEdit

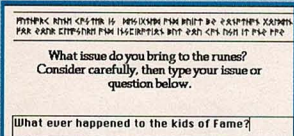


Learn to Type with shareware.

ShrinkWrap
SoftwareFPU 3.04
Sound Manager 3.2
StuffIt Expander

Shareware Central folder

All the programs from this issue's shareware reviews. See page 116.
About this Mac 2.08
Alias-Daemon-111
CatsEyeView Demo
CPU-View 1.2
Do It All calendar 3.0.3
edoc 1.2
Finder Options
Hand 0.14-pdf
Learn To Type folder
Nag 1.0
QuoteMan 1.0



Solve mysteries with Rune Cast.

Reminder 1.5
Rune Cast-10

Shareware Plus

100Mb of the very latest shareware, hot from the Internet.

What is T3?

Discover this innovative new magazine, giving you all the news on tomorrow's technology today.

Readers' Corner

More contributions from talented MACFORMAT readers.

Picasso & Magritte

What are they? Rolling previews

Where you'll find them: Demos

Mac: 68040

PowerMac: Any

Requires: System 7.1, 5Mb hard disk space, double-speed CD-ROM drive

You'll be treated to a visual extravaganza of colour with these rolling previews of CDs about two of the most famous painters in the world.

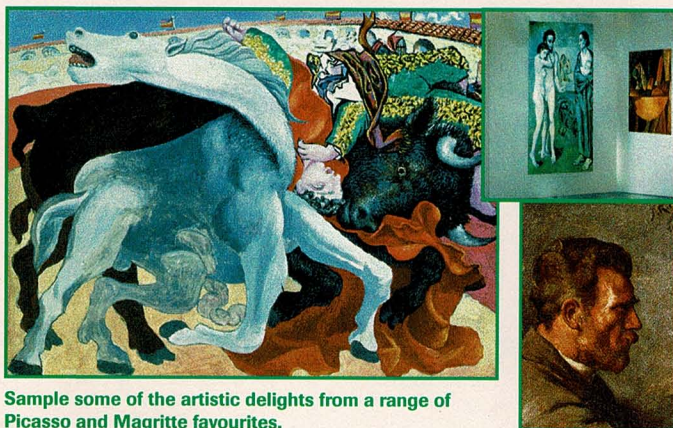
Through the images and sound

of Grolier's *Picasso* and Macmillan Interactive's *The Mystery of Magritte*, you'll see snippets of the life and works of these men. The discs chart the artists' major periods and influences, and introduce the major concepts that governed their work.

Find out how the full discs, packed with fantastic imagery and ideas, fare in our reviews, starting on page 103.



Magritte might look dodgy but he was pretty handy with a paint brush.



Sample some of the artistic delights from a range of Picasso and Magritte favourites.

Internet Explorer 3.0

What is it? Full Web browser

Where you'll find it: Internet Explorer folder

Mac: 68030

PowerMac: Any

Requires: System 7.1, 8Mb RAM, modem, Internet connection

The latest version of Microsoft's Web browser *Internet Explorer* has arrived on the Mac. Similar in design to version 2, the new *Explorer* boasts full

support for HTML 3.2 and all the major multimedia formats including QuickTime video, enabling you to view all the best that the Internet has to offer.

The browser also incorporates a Java Virtual Machine, so you can enjoy interactive pages written with the exciting new Java language.

The *Internet Explorer 3.0* installation also gives you a copy of Microsoft's *Internet Mail and News* so you can send and receive e-mail

and participate in newsgroups. You can access these features straight from the *Internet Explorer* menu bar.

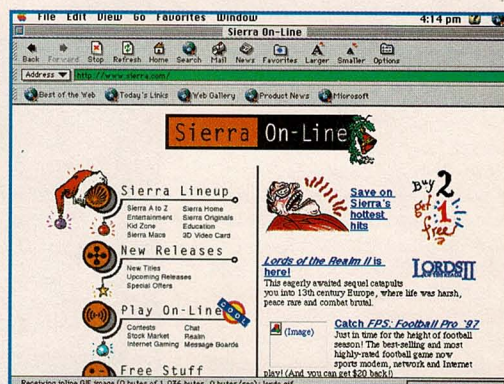
Internet Explorer runs on either a 68K Mac or a PowerMac and is designed to use as little memory as possible. So, to coin a phrase, where do you want to go today?

To Install

Double-click the **Installer** icon and save to your hard disk.



Go surfing on the old fibre-optic ocean, courtesy of the latest version of Microsoft's *Internet Explorer*.

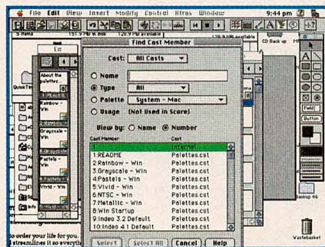


Visit pages all over the Web and save your regular points of call as Favourites you can access from a menu.



MACFORMAT Reader Awards

This issue we reveal the results of the MACFORMAT Reader Awards – all the products which you voted the best of 1996. We've also included demo versions of some of the prominent



Lights, camera, action! Create fantastic interactive productions with the *Director 5* demo.

winners on this issue's CD-ROM. You'll find these in the Reader Awards folder.

To find out which awards these five packages have won, turn to page 28, where we announce the winners in all 19 categories.

GraphicConverter 2.5

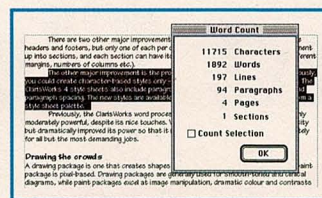
This is the most recent upgrade of this hugely popular shareware application. It's an invaluable tool for handling images saved in dozens of different formats.

Marathon 2

Marathon 2 is the ultimate 3D shoot-'em-up: you saunter through



You against the world? It's splat time for the Phfors in *Marathon 2*, a firm favourite in the gaming world.



This demo of *ClarisWorks 4.0* shows the features you may be missing if you own an older version.

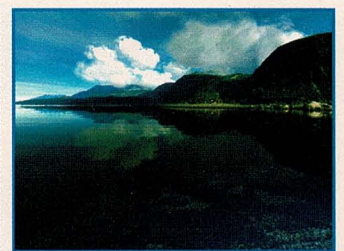
corridors, armed and ready to kill your enemies, the Phfors. We've got four playable levels here, one of which you can even play against a friend on a network.

Bryce 2

Bryce 2 is a superb tool for producing breathtaking 3D worlds and abstract sculptures. Nothing else will give you results quite like this – and it could bring out the artist in you. You'll need a PowerMac or a 68040 Mac with a Floating Point Unit (a Quadra, for example) to use this save-disabled version.

ClarisWorks 4.0

One of the most popular programs on the Mac, *ClarisWorks* is an integ-



No, it's not a Constable, or a Monet – but it could be you... Create stunning images with *Bryce 2*.

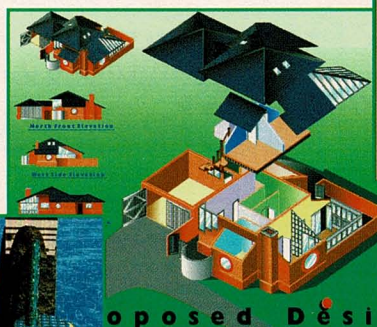
rated package that includes all the essentials you need – word processor, spreadsheet, database, drawing, painting and communication modules. You can try it all out in this save-disabled demo of the latest version.

Director 5

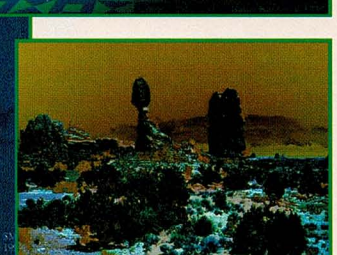
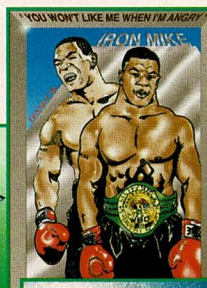
Director 5 is the world's foremost multimedia authoring tool. It's the industry standard for the production of professional multimedia presentations, animations, interactive advertising, multimedia kiosks, title developments and Web pages. This save-disabled demo enables you to try *Director's* features for yourself.

Readers' Corner

Yet again we've got some fine work from our readers. This month our top artistic endeavours come from SM Shahrokni and Helge Hansen. Honorable mention goes to Benjamin Sights for his innovative VAT calculating system, and to Fenwick Cooper for the upgraded version of his great car racing game *Super Carz*. For all these and more, just double-click on the Readers' Corner folder.



A little bit of *Bryce*, a touch of *Photoshop* and look what you can come up with – keep sending your artwork in!



Got a problem?

Before installing software from the Cover CD or Floppy Disk, we recommend you always back up any important work on your hard disk. This precaution will avoid problems if it turns out that a program isn't compatible with your Mac set-up.

We make every effort to check our Cover Disks for compatibility and viruses, but the information here is intended as a guide only, and MACFORMAT cannot be held responsible for any damage to data, any inability to use this software or any resulting losses. So please back up first.

If your CD-ROM or disk is defective, return it to us and we will replace it. Please make sure you have followed the installation procedures described in these pages correctly, to ensure that there is a physical problem with the disk itself. Otherwise, the replacement will give you exactly the same problem!

Enclose a self-addressed padded envelope (but we'll pay return postage) with the disk or CD, and a description of the fault. Please do not return disks or CDs to the editorial office; we don't hold any stocks of them and can only

refer you to the appropriate address below.

Return faulty CD-ROMs to:
MACFORMAT CD returns
Andy Pope, Ablex
Harcourt
Halesfield 14
Telford, Shropshire TF7 4QR

Return faulty HD disks to:
TIB plc, TIB House
11 Edward Street
Bradford, BD4 7BH



On the Floppy

DiskList

What is it? External Media Cataloguer

Where you'll find it: Floppy folder

Mac: Any

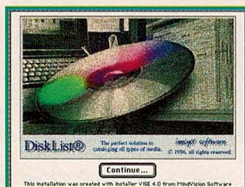
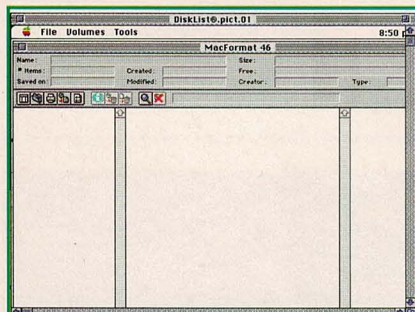
PowerMac: Any

If you've used and liked *DiskWizard*, then you're going to love this piece of software. *DiskList* is a cataloguer which will keep track of every file on every floppy, CD and external drive that you may have. Useful, colourful and very small – what more could you ask for?

Once you've installed *DiskList*,

you can choose to open a new catalogue or plump for the default folder, *DiskList Catalog*. From here it's simply a case of selecting **Add** from the **Volumes** menu and you're well on your way to creating a fully functional personal library right there on your hard disk – minus the scowling librarian.

DiskList's comprehensive graphical interface enables you to perform all the functions you'd expect from a professional cataloguer, such as printing, exporting and preference setting – and yet it still only absorbs 370K on your hard disk.



Go cataloguing crazy with the fantastic *DiskList*, and create your very own personal library. Top stuff.

Malph

What is it? Drag Manager aware switching/launching utility

Where you'll find it: Floppy folder

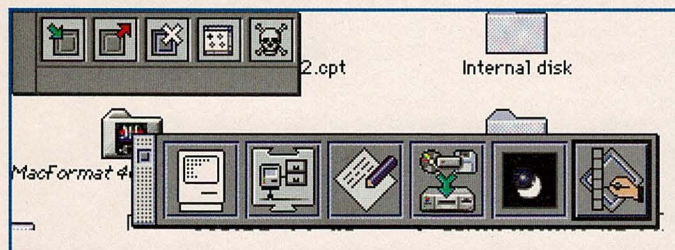
Mac: Any

PowerMac: Any

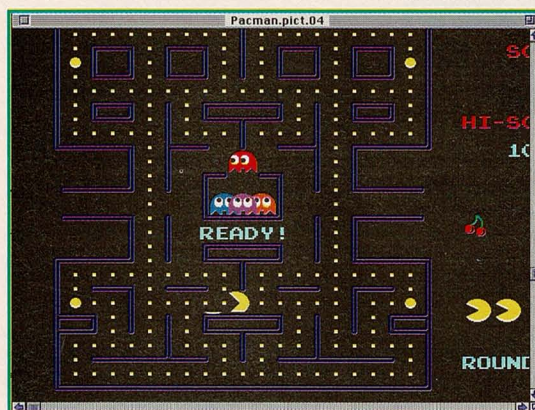
This dinky little utility will save your thumbs from making those tiresome mouse-clicks just to access an application. *Malph* enables you to switch from one application to

another without having to go anywhere near a pull-down menu.

The program has a neat little graphical panel that floats on your Mac Desktop and lets you know what applications you are currently running, and enables you to open, add and delete others in easy drag-and-drop movements. Just click on an icon to switch to another program. *Malph* is not only kind to your hands, but practical too.



Switch between applications as if by magic! Say goodbye to those pull-down menu blues with *Malph*, a practical and time-saving tool.



Remember the maze? Yes, it's *Pacman*, that fabulous game where you scuttle around eating dots and avoiding ghosts. They don't make them like this any more...

Pacman

What is it? Arcade game

Where you'll find it: Floppy folder

Mac: Any Mac (but we couldn't get it to work on a Quadra)

PowerMac: Any

There's not much to say about this game, really: it's *Pacman* – and it's a classic. The principles are the same, the layout's the same, and it's just as much fun to play as you remem-

ber. It's one overactive half-circle cruising its way around a polka-dot maze attempting to avoid some innocuous-looking ghost-like figures – until the moment it chews on a power dot and the ghosts are forced to run.

Be prepared to be chomped pretty early on in the first few games as some degree of dexterity is needed to get to grips with the controls. But overall it's timeless and fun.

RChess

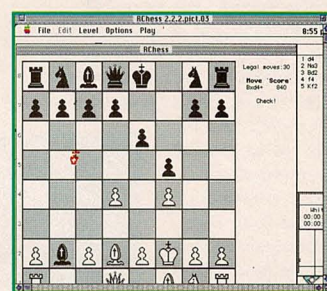
What is it? Strategy game, right?

Where you'll find it: Floppy folder

Mac: Any

PowerMac: Any

If you misspent your youth playing games your mother would approve of, you're going to love this game. If not... well, there's always *Pacman*.



Test your chess skills against the computerised Nigel Short.

How to use your disk

High density floppy disks normally contain up to 1.4Mb of software, but so that we can bring you as many useful programs as possible, we use a compression utility to fit more on. This means you need to decompress the software before using our Disk; this issue you'll need 2.4Mb of hard disk space.

We also recommend that you always make a back-up of the *MACFORMAT* Cover Disk, just in case anything goes wrong.

To decompress the Cover Disk contents, open the *MacFormat 46* folder on your hard disk and double-click on the *MacFormat 46* icon. You'll see a screen telling you about the compression utility we've used. Click **Continue** when you're ready.

A box then asks you where you want to save the software. Choose the place on your hard disk where you want everything stored, and click **Save** to get hold of this issue's programs.

With the new Macintosh PowerBook, you'll make a lasting impression even before you present.



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If you have access to the Internet, you can find out more about the Macintosh PowerBook 1400 range at: <http://www.euro.apple.com/uk>



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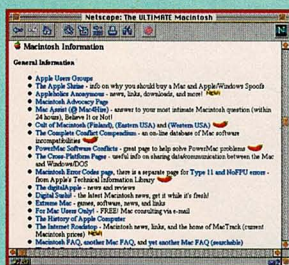


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Ultimate Macintosh

The Ultimate Macintosh is the authoritative guide to Macintosh sites on the Internet. Compiled and edited by Michael Yee in the United States, The Ultimate Macintosh points you in the direction of every worthwhile Mac page, including official Apple sites, news sources, shareware sites for downloading software and Internet information.



The Ultimate Macintosh is one of FutureNet's most popular pages.

You'll also find pointers to areas concentrating on hardware, graphics, programming and more. A bumper guide to games joins a list of the major Mac hardware and software firms and their Web pages.

The Ultimate Macintosh is part of MACFORMAT ON-LINE, MACFORMAT's own Web site. Just point your Web browser at <http://www.futurenet.co.uk/computing/macformat.html/>

Your Web pages

Explore this issue's Mac 97 technologies in depth, and discover the sites that help you find the pages you need.

Predicting the future



Apple is set to storm into 1997, full of new and progressive ideas – find the details in our Mac '97 feature on page 46. The future looks bright, and you can use the Web to get a sense of what's coming. It's filled with technical papers on new ideas and technologies. You'll find that a lot of the material is not exactly beginner-friendly, but persevere for valuable insights into the systems everyone could soon be using. You'll also glimpse a new way of doing business: many sites are invitations to programmers and manufacturers to get involved with a particular system. The Web makes it easy to make information and helpful software available to the people who can make or break a new concept.

Name

Web address

Apple Research Laboratories

<http://www.research.apple.com/>

The group that created QuickTime, OpenDoc and many other key Apple technologies offers a glimpse of what else it's got up its sleeve. You can download Squeak for example; it's a new, free programming language.

Be

<http://www.be.com/>

Whether or not the rumours of Apple using the BeOS are true, the wonder system will appear on the PowerMac next year. Find out what all the fuss is about.

FlashPix

<http://www.kodak.com/daiHome/flashPix/index.shtml>

Discover the facts behind the ambitious new universal picture format for computers, printers, cameras and scanners.

OpenDoc

<http://www.opendoc.apple.com/>

Already available to try out, OpenDoc starts making itself useful in 1997, with the first co-operative parts going on sale. Here's where you see how OpenDoc works.

Java

<http://www.sun.com/java/>

Seen by many as the future of computer software, Java remains somewhat impenetrable unless you're comfortable with programming concepts; but this is where you'll find out how the Java explosion is progressing.

Mac OS Runtime for Java

<http://www.devtools.apple.com/mrj/>

This page gives you the lowdown on how you'll be able to use Java programs on your Mac.

Meta Content Format

<http://hotsauce.apple.com/>

If it catches on, MCF could lead to far more dynamic and useful ways of navigating around Web pages than simply clicking on coloured links. For example, you can browse the Web in 3D with Apple's MCF-based *HotSauce* program.

1394

<http://www.firewire.org/>

High-speed data transfer between different devices, all with a single cable design? It's not a dream any longer.

Searching the Web



The Web just keeps getting bigger all the time, so the ability to rummage through its hundreds of thousands of pages for the one you want becomes ever more essential. Luckily, you won't be left wanting for efficient search sites, each of which can trawl through thousands of pages for that key word or phrase that indicates the page is on the subject you're looking for. Search sites are becoming big business, with slick graphics and new ways of helping you find the information you seek. Pages like AltaVista and WebCrawler are among the best-known brands on the Web; and on the day Web commerce finally takes off, of course, you'll probably be expected to pay for their services.

Name

Web address

All 4 One

<http://www.all4one.com/>

Four top search sites in one (as shown above), All 4 One is either more than the sum of its parts or extreme overkill.

AltaVista

<http://www.altavista.digital.com/>

Digital's search area is renowned for the flexible way in which you can define your search criteria.

Lycos

<http://www.lycos.com/>

One of the earlier search facilities has been reinvented for the coming commercial era.

Yahoo UK & Ireland

<http://www.yahoo.co.uk/>

Based on the huge Web catalogue (<http://www.yahoo.com/>), this UK spin-off places an emphasis on domestic sites.

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QuickTime to become a multimedia player ■ Apple works towards new Mac OS 8 plan for January ■ Apple cafés?! ■ News Editor: Richard Hill

MACFORMAT NEWS

Apple aims for universal multimedia

Future versions of Apple's QuickTime video system will turn the software into a full-blown multimedia environment where you can interact with objects placed in a QuickTime movie – and the objects can respond to each other. If the new interactive version of QuickTime proves as successful as its video predecessors, it could lead to a consistent standard for multimedia files. This could take multimedia beyond the confines of self-contained programs on CD-ROM to Internet-based objects which can be mixed with CD-ROMs and each other, opening up exciting possibilities.

The prototype system was shown at Heathrow's recent European

Developers Forum, an industry seminar to reveal new Apple directions for the Mac and help software writers plan future releases. Apple staff referred to it as QuickTime Interactive (QTI), although that may not be the name we finally see it under when the software is released in the summer.

QuickTime Interactive builds upon the continuing integration of Apple technologies within QuickTime, such as the existing ability to drag a QuickDraw 3D object into a QuickTime movie to merge the two. QTI takes this further, enabling software developers to place an interactive environment within a movie window. The environment can use QuickTime's existing video and text capabilities.

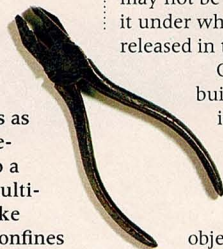
Developers can then create objects, which can be stored elsewhere – within the Mac's Scrapbook, for example – and simply placed within the movie window. Once inside this controlled space, they take on lives of their own. Each object can follow unique behaviour patterns, responding to your mouse movements or to other objects as they appear or vanish.

And in the tradition of QuickTime movies, you'll be able to change the size of the window – and its contents will change size with it. For software developers, this means they'll be able to write a single program which will display at full size on any Mac monitor – or on hypothetical hand-held devices with smaller screens, for example.

Apple staff showed QTI working with an in-house multimedia authoring tool. Although it was

fairly crude and not set for release itself, the program showed an important QTI attribute. Authoring options such as video, animation, text and sound were shown on a tool palette like the ones you see in many creative programs. These tools were not built into the program; they were set up by referring to QTI's features. By updating your version of QTI, you also update the features in your authoring tool.

A more polished version of this QuickTime shell concept is likely to form the basis of HyperCard 3.0, Apple's revamped multimedia authoring kit. Also due in 1997, the program will certainly be based on the new QuickTime.





Apple seeks help for Mac OS 8

Apple is forging partnerships across the industry as it puts together the new plan for developing its Mac operating system. While the core of the projected Mac OS 8 rewrite will come from Apple, other parts are likely to use technologies developed outside the firm.

Apple's fresh, pragmatic attitude towards the way it works has emerged during a round of appearances in the UK and the United States by Ellen Hancock, Apple's Chief Technology Officer and head of the Mac OS engineering team. She gave speeches during November at London's Apple Expo, Heathrow's European Developer Forum and the massive Comdex electronics show in Las Vegas.

After four months with Apple, Hancock said she had a clear idea of Apple's task for the future: "We need to become a lot more effective at delivering our technology to the marketplace and gaining its adoption – not just within Apple's current market strongholds, but broadly, across the industry. I view my job as clearing the path to make that happen."

"I'm very clear that the company has to ruthlessly and relentlessly drive out the Not-Invented-Here syndrome," she added. "We need to begin working much more closely with alliances. And we have to

develop the discipline to meet our commitments."

"A year from now I'd want us to be judged by two things: were we open to new ideas? And did we deliver to customer expectations?"

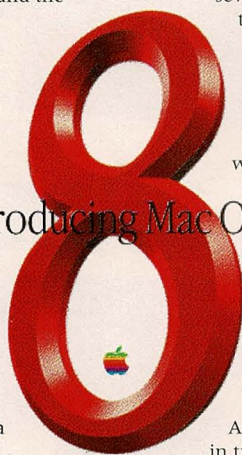
The most obvious symbol of Apple's previous deficiencies has been Mac OS 8, also known as Copland. Billed as a state-of-the-art operating system with advanced features such as the ability to run

several programs simultaneously, Mac OS 8 has been delayed over several years. More recently, Apple has announced that some Copland technologies would instead appear in future versions of System 7, but has offered no alternative Mac OS 8 vision.

Hancock says the lack of information is temporary. "We're engaged in a transformation to build a new Apple that's much more in tune with the industry today. We're working side by side with other industry leaders to cross-pollinate the best of our technologies with the best of theirs."

"But above all, [our] strategy for Apple means getting very clear about the unique values that we bring to our customers and to the industry. We need to focus on those values and drive forward with relentless and rapid innovation... with products that arrive on schedule and with no compromise in quality. We are moving strongly in

Introducing Mac OS 8



The powerful but incomplete BeOS is one candidate for forming a new core for the Mac OS, but Apple maintains that it's just one of several options.

that direction now, and with deliberate speed. All the pieces may not come together as quickly as you want or need them to," Hancock concludes, "but they will come together in a way that gets it right."

Which partners?

Hancock's declaration of a desire for partnership follows recent speculation that Apple was seeking to use the BeOS, an embryonic operating system developed by Be (a firm founded by former Apple executive Jean-Louis Gassée), as a major part of Mac OS 8 (see News, last issue).

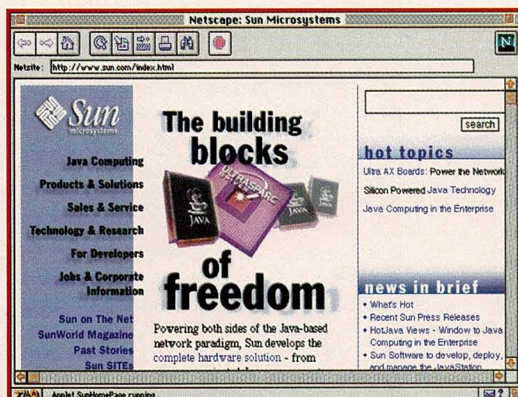
"The last couple of months have churned up a lot of rumours and speculation in the media about where we're headed, and with whom we might be travelling," said Hancock. "I won't comment on the accuracy of any of the various rumours that are swirling around,

but I would like to make one observation. Most of the stories I've seen focus on just one of the options that we're considering. You should know that not everyone that we're talking to is talking to [the press]."

"We have several ways to go on this," Hancock continued. "We're evaluating options to either make or buy components of Mac OS 8. I have several alternate product plans on my desk that all meet our customers' and developers' key requirements for our next-generation operating system."

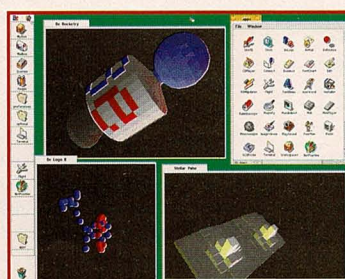
"In the spirit of the new and open Apple, we are looking outside. There are some very attractive technologies out there that we are considering incorporating into Mac OS 8. For example, any next-generation OS which doesn't integrate Java won't be around for very long. And clearly Java is something we have licensed from Sun."

Hancock told audiences that a new strategy for Mac OS 8 would be unveiled early in 1997, probably at January's Macworld Expo in San Francisco, historically the biggest Mac show of the year. She has also been making changes in the way the engineering team is working on improving System 7: "We're convinced that the January release [Mac OS 7.6] will be better in quality than anything you've seen from Apple."



Sun's Java language is already set to become part of the Mac OS next year...

... But, along with the BeOS (right), it's one of the systems that could be the new Mac OS foundation.





Mysts clear for view of sequel

The sequel to one of the most influential games of the 1990s is due next year, and we have the first pictures here. *Riven* continues the story begun in *Myst*, Bröderbund's best-selling graphic adventure.

Myst has sold over two million copies so far – a game which sold a tenth of that number would normally be considered to have done well. The title's importance goes beyond numbers, though: its



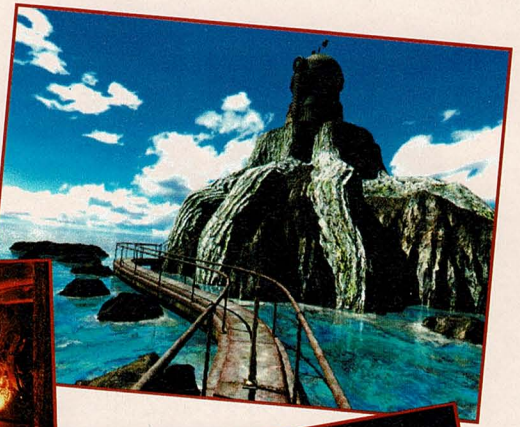
The secrets that books reveal are as much a part of *Riven* as in *Myst*.

combination of a detailed, adult storyline and rich graphics has made it the point of comparison for subsequent adventures. Its control system is concealed and you simply click on objects within the environment to use them.

Riven is expected to appear next summer. Rand Miller of the game's developer Cyan says that the company has kept the creative hunger which made *Myst* a success: "Except for the fact that this time Cyan has five times the people, ten times the budget and 500 times the computing power, *Riven* is being created with the same attitude that drove *Myst*. We want to drive the storytelling potential of interactive titles notably forward. We don't want *Riven* to be simply a sequel."



The long-awaited follow-up to hit adventure *Myst* is *Riven*, which again features some sumptuous illustrations.



Like its predecessor, *Riven* challenges you to explore a mysterious world full of atmosphere and surprises.

New PowerPCs due in March

Increasing industry support for the Power PC Platform (PPPCP) was announced at November's Comdex show in Las Vegas, and you can expect the first machines to appear in March or April. Several manufacturers showed prototypes of machines complying with this standard, which will enable machines to run the Mac OS as well as Windows NT and other operating systems.

Although no pricing or release dates have yet been announced, Umax showed a Power PC Platform machine which is expected to be released in Spring 1997. Other manufacturers (such as Bull and companies within the Taiwan New PC Consortium) are planning to release machines at a similar time.

Two reference designs for Power

PC Platform computers from Motorola and IBM, codenamed Yellowknife and Long Trail respectively, were also launched at Comdex. These will help system manufacturers design computers which comply with the Power PC Platform standard by showing how the systems should be put together and which components can be used. Umax, for example, will use the Yellowknife design for its machines. Motorola's own machine will appear in April 1997, but neither Apple nor IBM has announced release dates for its own PPCP computers.

The specifications for the reference designs are available on the Internet from http://www.mot.com/PowerPC/solutions/ppc_platform.html



Motorola's StarMax is a hybrid of Mac and PC components, giving you an idea of the way the PowerPC Platform will look and operate.

News in brief

Apple Café to open

If you're a devoted Mac owner, you'll have lived and breathed Apple for years; next year you may get the chance to eat and drink Apple as well. The firm is lending its name to a projected chain of Internet cafés, the first of which will open in Los Angeles in the latter part of 1997.

Visitors to the café will be able to sip cappuccinos as they use Macs installed at each table to connect to the Internet, try the latest CD-ROMs or talk to other visitors over a video network. Mega Bytes International

will run the café, and is looking at launching other Apple Cafés in New York, Tokyo, Paris and, yes, London.

Power signs up Be

Whatever the outcome is of the alleged discussions between Apple and Be (see story on page 17), the BeOS operating system will certainly appear on Mac-compatibles shortly. Power Computing has licensed the BeOS and plans to include it on its Mac OS machines from January, alongside the Mac OS.

You'll be able to start your computer up

with either operating system. The BeOS, though, is only intended for professional programmers at this stage: it still needs a lot of development work and there aren't any programs you can use with it.

Prentice Hall

In MACFORMAT 43 we reviewed versions of multimedia authoring packages *Director* and *Authorware* made specially for colleges and schools. The contact number we gave for distributor Prentice Hall was actually its fax number; you can phone the firm on 01442 882266.

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November's Apple Expo featured new Macs, superb graphics and much more. Richard Hill delves in and investigates in a What's New special.



New Macs at Expo

Many new Macintosh and Mac-related products were seen in public for the first time as November's Apple Expo opened its doors. Held at London's Olympia, the show welcomed an estimated 34,000 people over its four days. Dozens of exhibitors showed their wares to the Mac-hungry audience, and among them were big

names including Apple, Microsoft, Adobe and Macromedia.

Undoubtedly the main attraction was the biggest selection of Mac-compatible computers ever seen under one roof in Britain. But it was still Apple who held centre stage with the announcement of the PowerMac 4400, a new model which now starts off the Apple range at just £1,050. Its 16Mb of RAM and 160MHz 603e processor

make it a capable workhorse if you're on a tight budget or want a Performa-speed machine without the extra software.

There were constant crowds circulating around Apple's PowerBook 1400s, the first portable Macs to be released in nearly a year. The 1400 series brings you the speed and capabilities you expect from a modern PowerBook at much lower prices than previous models (see our review last issue). They precede a new state-of-the-art PowerBook range due in Spring.

The Mac's first licensee, Power Computing, made its debut at Expo with a new series of PowerBase computers. These low-cost Mac-OS

computers use 603e processors and join the existing PowerCentre, PowerTower and PowerTower Pro to offer the most complete choice of machines outside Apple's own.

Power was exhibiting at MCM's stand, which also played host to the BeBox computer and its impressive BeOS operating system. Be dealt with enquiries about the firm's relationship with Apple (see News, page 16) with great patience.

Umax, Motorola and DayStar also showed off their Mac-compatible ranges through distributors IMC, Principal and Computers Unlimited. It all added up to a fantastic choice if you were in the market for a new Mac.



Publishing options

New challengers to the established desktop publishing domination of *QuarkXPress* and *PageMaker* made their first appearances at Expo, following the lead of last year's newcomer *UniQorn* (back this year in version 1.1). A newly revamped version of DTP stalwart *Ready Set Go* joined *VivaPress Professional*, a new German import.

Now under the control of Diwan Software, *Ready Set Go GX* offers specialised tools that enable you to create documents in many different languages. It uses Apple's QuickDraw GX imaging system, making it easier to use non-Roman fonts such as Chinese, Japanese and Arabic. The program's GX features further give you precise control over your type, including distinctive features such as transparency.

You can also save any *Ready Set*

Go GX document as an HTML page, ready to place on the World Wide Web. The program automatically adjusts the text styles you've chosen to an appropriate equivalent style, keeping within the restrictions of HTML.

German DTP program *VivaPress Professional* comes to the UK courtesy of the Rothwell group. You can open *QuarkXPress* or *PageMaker* documents straight into *VivaPress* to take advantage of its features. These include Aliases – objects or pages linked to an original elsewhere in the document. Change the original and the Alias is modified too.

■ **Ready Steady Go GX: £470. Out: Now. Contact: Diwan on 0171 252 5333.**

■ **VivaPress Professional: £TBA. Out: early next year. Contact: Rothwell on 01252 300300.**



Cinema 4D

There's an encouraging number of new or re-vamped 3D graphics programs in the pipeline at the moment, but the one which just might surprise everyone appeared at Expo. *Cinema 4D* offers a comprehensive set of tools for modelling, illustrating and animating your 3D scenes. (The "4D" refers to the fourth dimension of time.)

The first thing you'll notice about *Cinema 4D* is its speed. Written for PowerMacs, it'll run comfortably even on one of the older models: we saw an impressive demonstration of *Cinema 4D* in action on an 8100 at the show.

Cinema 4D's responsiveness enables you to set up a model or scene, add lighting and textures, and get an idea of the result using a quick preview render which takes only a few seconds, even on complex scenes, which is pretty speedy. You can even have lighting and surfaces switched on while you work and make changes – *Cinema* uses Gouraud mathematics to depict the light and shade on any object instantly.

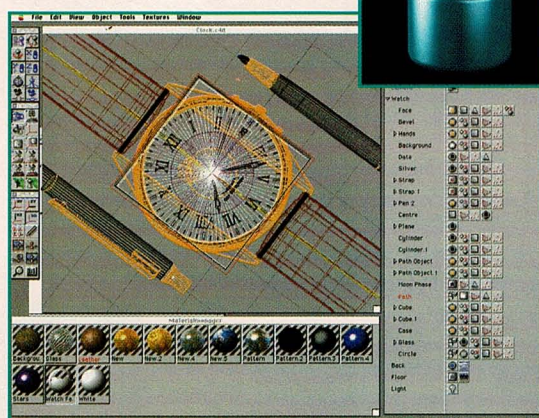
Cinema's Object Manager makes building scenes easy. It lists every object in your scene, and you can group objects together and move the entire group with one simple command – essential for producing animated sequences easily. You can also change the type of material or surface effects used over an entire

group, a feature which is potentially a huge time-saver.

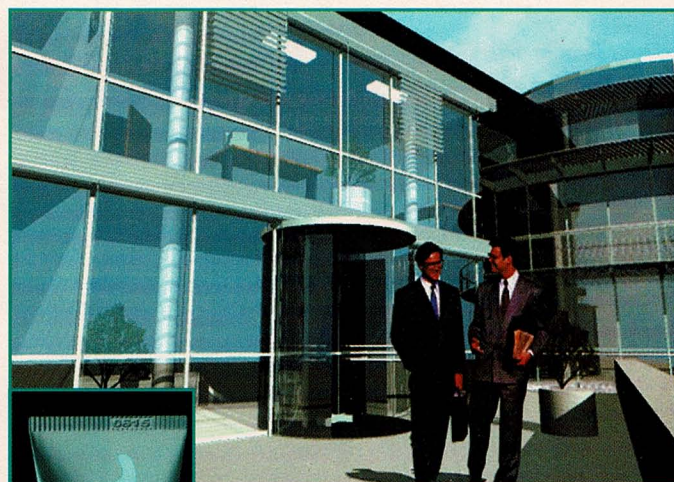
Cinema takes you into the fourth dimension with animation features that include full camera controls and the ability to focus on a particular plane of your scene. The timeline editor makes it easy to view the sequence at any point and adjust the ambience with lighting changes.

Cinema 4D is produced by the German firm Maxon, but has been brought to the UK by HiSoft, a company which is new to the Mac but has an excellent reputation in the now-dwindling Amiga and Atari ST markets.

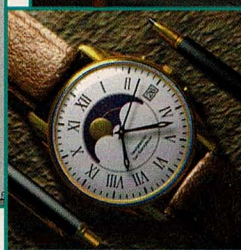
■ Price: £699. Out: before the end of 1996. Contact: HiSoft on 01525 718181.



Cinema 4D offers a full set of features, including the versatile Object Manager (to the right of the screen above).



Cinema 4D's powerful features are ideal for typical professional 3D tasks, whether it's architecture (above), product design (left) or showing giant alien insectoids threatening the planet's existence (below).



You can use wireframe graphics (far left) or instant Gouraud shading while you're building your model, then render it in gorgeous detail (near left).

Poser 2

Fractal Design is making a big name for itself with software based on the traditional techniques and practices of illustrators. It used Apple Expo to introduce version 2 of its imaginative 3D modelling program *Poser*, a tool for creating human figures, posing them however you wish and adding texture and lighting effects. You can then transfer your figure to an image-editing or 3D program and use it in your creative work.

Poser 2's new features include a wider range of figures to choose from: you can make a character either male or female and adjust its

proportions according to the target age. You can pose it in the nude or with a selection of different types of clothing, and add props for the character to wear or hold. You'll often want to add a wig, for example, which you can link with the character's head, so that the two move together as you adjust the pose to suit your needs.

For a more adventurous flight of fancy, you can substitute other 3D objects for *Poser* body parts. Create your own Edward Scissorhands figure with household implements for fingers, or make more subtle adjustments to limbs for specialist work. When you've made your

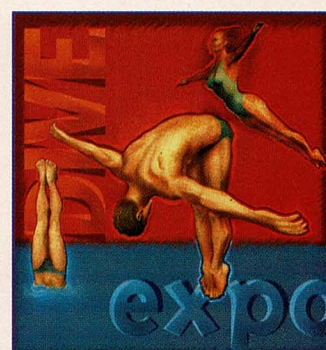


Poser 2 enables you to set up human figures and set them in any pose. You can now also clothe figures for further realism.

You can save *Poser 2* figures as 2D images and use them in your own illustration work.

basic model, you can then add lighting from several sources and shade your figure with ready-made textures for the final touches.

It's now possible to animate a figure once you've made it. Make a QuickTime video clip of a figure walking, running, dancing – anything you want. Every movement looks realistic thanks to *Poser*'s use



of inverse kinematics, a system which makes the figures move according to the laws of gravity and other physical restrictions. You're left with very realistic results.

■ Price: £234. Out: before the end of the year. Contact: Principal Distribution on 01756 704040.



Expo round-up

Immedia appears

Taking the integration of cross-media publishing to a new level, Quark's ambitious *Immedia* is now on sale in the UK. This £1,169 XTension slots into *QuarkXPress* to add multimedia and Web-authoring capabilities to the leading DTP program. The idea is to make it easy to use the same material in both print and interactive media.

QuarkImmedia uses a straightforward script-based system to enable you to add video, animation and sound to what look like regular

QuarkXPress documents. Look out for a review of this potentially groundbreaking software soon.

■ **Contact Quark Systems on 01483 454397 for more details.**

Introducing ClickWorks

Scitex's *ClickWorks* is a new addition to the competitive multimedia authoring field, already occupied by the likes of *Director* and *Apple Media Tool*. You can use the program quickly to create interactive catalogues – presentations of video and

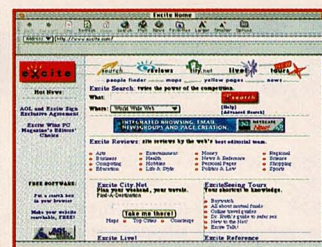
animation linked to large amounts of information that you need to update regularly.

You can link *ClickWorks* to your database files, or to directories stored on the Internet, and create your media production without having to learn the script languages many other authoring packages rely on.

■ ***ClickWorks* costs £1,169. For more details contact Principal on 01756 704040.**

Explore the Net

Microsoft's challenge to the World Wide Web domination of *Netscape Navigator* continues with the forthcoming *Internet Explorer 3*, previewed at the show. As with earlier versions, the software is free – we've



***Internet Explorer 3* is the free Web browser on the MACFORMAT CD.**

placed the pre-release version on our Cover CD. The final version is due out before the end of 1996.

Internet Explorer 3 brings more multimedia features into the standard Web browser. You can use Java applets (small programs written especially for use over the Net) within a Web page, along with QuickTime video, QuickTime VR virtual reality and VRML 3D files.

Version 3 supports HTML 3.2, a more sophisticated form of the code used to create Web pages. You'll be able to view pages which incorporate complex type designs but remain small and quick to download.

You can also personalise *Explorer 3* by drag-and-dropping a link to a chosen Web page straight onto the **Quick Links** toolbar to save its location. *Internet Mail and News*, a companion program, enables you to access newsgroups and e-mail.

■ **Contact Microsoft on 0345 002000 for more details.**



Left and right: *ClickWorks* is the latest option if you're looking for a multimedia authoring tool.



Working *ClickWorks* demo and *Internet Explorer 3*



Imaging explosion

Apple Expo's roots lie in the graphics and printing industries, so it was no real surprise to find many tools for working with images, including a particularly good selection of affordable and innovative scanning devices, to aid you in sending images to your Mac.

Your choice of affordable digital cameras is growing fast. Kodak's DC25 (£389), the latest addition to its range, enables you to take pictures at a resolution of 493 x 373 pixels. You can save the images in the camera's 2Mb of RAM or on removable memory cards. The camera comes with a bundle of software, including *Kai's Power Goo* and Kodak's *Picture Easy* image editor.

Agfa's ePhoto is a £469 model which can take up to 36 pictures at 640 x 480 pixels, or 72 pictures at 320 x 240. It's a friendly, fully automatic camera with several flash settings and has a light, compact design. It comes with Adobe's *Photo-Deluxe* image-editing software.

Due out next year, Nikon's Cool-Pix range of digital cameras use the

portable nature of the device with great imagination. The Cool-Pix 300, for example, comes with a stylus pen which you can use to draw onto the camera's LCD screen. Take a photo and circle the main point of interest with the pen, then use the built-in microphone to make audio notes on the photo's subject. It's perfect for taking pictures for presentations.

For image scanning of the highest available quality, professional publishers and printing houses rely on drum scanners. Devices such as Eurocore's Hi Scan (from IMC) are capable of scanning an image at 10,000 dots-per-inch (compared to a desktop scanner's 600 dpi). Hi Scan can also enlarge your photo transparency by up to 3,333% at 300 dpi – all for a cool £17,625. A tad pricey perhaps, but doesn't it look gorgeous, though?

Contacts:

■ **Kodak on 0800 281487.**
■ **Agfa on 0181 231 4200.**
■ **Nikon on 0800 230220.**
■ **IMC on 01344 872800.**

MF

Apple Expo is always a big hit with the printing trade, and devices like the Hi Scan drum scanner made them swoon.



Agfa's ePhoto is designed from the outset as a simple, everyday digital camera.



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The MACcelerate™ range has two important features, not found on similar products, which are essential to maintain the highest standards of system reliability.

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Whilst the PowerPC 604e was designed to operate at 3.3 volts, Power Macintosh main circuit boards operate at 5 volts. Although the processor's I/O buffers can be run at 5 volts, this may **decrease** the processor's lifespan. Perhaps not such a serious problem for infrequent users, but crucial if the system is to be used regularly or even constantly (eg. servers etc.). MACcelerate™ guarantees the operation of processors at the correct voltage - as specified by Motorola!

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The current Olympic Record is held by Donovan Bailey who was timed at 9.84 seconds during the 1996 Games in Atlanta

The New Olympic Record would be just 2.62 seconds!



You know what it's like...

When you're starting your Mac, loading a program or file, waiting for that Photoshop™ effect, or in fact doing pretty much anything... your computer doesn't feel as fast as it used to, does it? Its not become tired itself, but the demands of the latest OS versions and the newest applications keep getting higher and higher and slow your system down. And, if you've tried one, you'll know that today's Macs are a lot faster.

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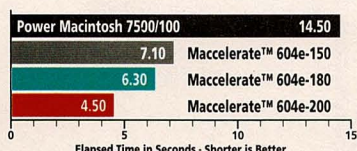
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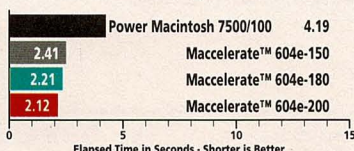
Speed Test - Photoshop 3.05 Gaussian Blur 204% to 322% Speed Increase!

Test: Image Gaussian Blur
Test Picture: 1181 x 1671 pixels - 24bit



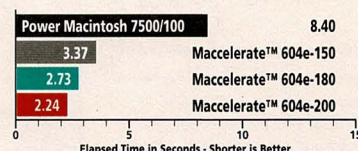
Speed Test - KPT Bryce 2.0 Rendering 174% to 198% Speed Increase!

Test: Render an Image
Test Picture: 480 x 360 pixels



Speed Test - Photoshop 3.05 RGB to CMYK 249% to 375% Speed Increase!

Test: RGB to CMYK Conversion
Test Picture: 1181 x 1671 pixels - 24bit



Point your web browser at <http://www.mot.com/SPS/PowerPC/products/semiconductor/chips.html> to see why the 604e is the most powerful processor available for desktop systems.

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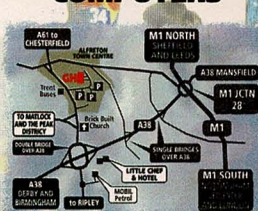
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Piracy doesn't pay

When I surf the Net, I download a lot of stuff, like *Cyberdog* for instance. That takes me ages to do and I run up the phone bill. I have not yet found a "pirate" site, but if I did I wouldn't be bothered to download any "pirate" software as most games are around 10 to 20 megabytes in size even compressed. Why download a 20Mb file and run up your phone bill to around £15 to £20 when if you pay the little bit extra you get the full thing, technical support and a manual? So just don't bother.

John Rainsford
Athy, Co. Kildare, Ireland
via FutureNet

Too true. Telephone bills (and Service Providers' access charges, if any) are the hidden costs of this Internet thing that often get overlooked. And if 20Mb costs you £20 to download, then just imagine how much the 620Mb of demos, pre-

What a year it's been! And what a year it will be! Tell us how you see it all – write to: Alex Summersby, Apple-Talk, MACFORMAT, 30 Monmouth Street, Bath BA1 2BW.

views and software on the MACFORMAT Cover CD would have cost you to get from the Net, if you could have found it there at all. Just goes to show, MACFORMAT is better than the Internet! Well, cheaper, anyway. And speaking of costs:

Is it a Duracell?

I was recently charged £94 for what amounted to a simple battery replacement for my unwarranted Mac by my local Apple Centre.

When I insisted on the engineer's report, the simple battery replacement had mysteriously become a "logic reset". True, I didn't know my machine needed a new battery and it had to be diagnosed, but to the engineer this must have been the very first thing he tried. Incidentally, the Centre would not sell the battery separately.

I'm as annoyed with myself as with the Centre's pricing policy. With over four years' experience of using Macs, installing video cards, RAM and accelerators for friends, I overlooked the blatantly obvious and in my panic got an Apple engineer to do something that I could have done in an instant.

But isn't that what such Centres thrive on – customer panic, ignorance and their need to get their systems back as soon as possible, no

questions asked? These Centres can literally charge what they like.

As I left the Apple Centre, the assistant, aware of my displeasure, said, "It didn't work before – it now works. What's your problem?"

A £2.50 component at £94 was my problem.
MA Oyston
Gillingham, Kent

Well, you say £2.50, but just try buying one! My old Mac Plus takes a standard AA battery, but all the newer Macs we have around the office use special kinds of battery – each model a different one too! – and we weren't able to find anywhere that could just sell us one...

Umax: a correction

A clarification with regards to your review of the Umax Pulsar 604e/200 [MACFORMAT 44]. IMC, the Umax distributor, claims that the Pulsar will eventually support up to eight CPUs. In fact, part of Umax's licensing agreement with DayStar Digital contractually limits Umax's multiprocessing machines to only two CPUs total.

DayStar's new mini-tower Genesis MP uses the Umax chassis and is available in two and four CPU models. DayStar continues to offer our full-tower chassis in two

and four CPU configurations as well. Due to the limitations of current motherboard designs, DayStar does not intend to offer variations of these machines with more than four CPUs.

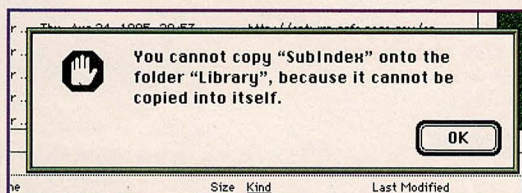
David Methven
Product Manager
DayStar Digital, Inc.
dmethven@daystar.com

We're happy to set the record straight and apologise for any confusion.

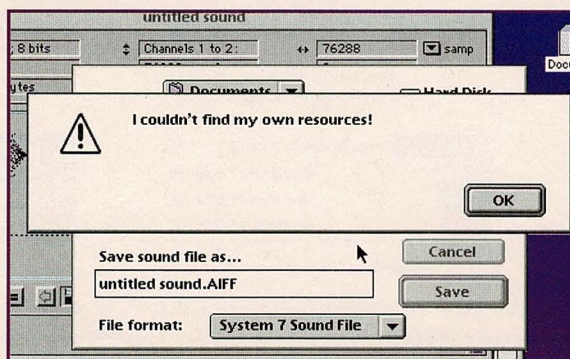
Game for a demo

At home we have a Performa 630 and we just got on the Internet (with help from the sites listed in MACFORMAT 39. Thanks!). At the Gamers Ledge site I found demos of *WarCraft II* and *Marathon Infinity*. Are you putting these on your Cover CD? I also have a suggestion for your Cover CD. I think there should be more games demos, and then especially for 68K Macs because I feel they are suffering from the fact that most games are becoming PowerMac only.

And a final word, not to you but to the software companies: keep in mind that there are a lot of people who don't have a PowerMac and they also want to enjoy great games like *Descent*. For example look at



Silly Things Your Mac Says, number 459 – a clear case of mistaken identity, from Peter Vince. It got even worse, Peter adds: "SubIndex" was actually a folder on a PC disk, and he couldn't copy it anywhere – "different folders, even a RAM disk. I eventually got round the problem by duplicating the folder on the PC floppy, copying the copy, then renaming it!" So *SubIndex* is secret PC code for "don't copy this folder"?



"A dialogue from a VERY CoNfUsEd Mac," sent in by Dan Karran. Dan adds that he's "only 13" and lives on the Isle of Man (and he enclosed a picture to prove it!), but I reckon neither of those factors is the cause of the problem. Probably.



The file "MF46.subsletter.cacover" couldn't be written, because the server is no longer connected. Do you want to continue copying?

Stop

Continue

Here's a stinker we got in the MACFORMAT office last week when trying to copy a graphic over our network (see, nobody's immune!) If the server is no longer connected but you select **Continue**, exactly where are you copying to?

LucasArts – they are making great games for the humble Macs (LC, Quadra, Performa, etc).

Joris Schreuder
Arnhem, Netherlands
via FutureNet

We included playable demos of both *WarCraft I and II* on our Cover CD last issue, and *Marathon Infinity* this issue to accompany our review (page 110). We do keep an eye out for software that will run on non-PowerMacs, and a few recent releases like *Worms* don't require top-spec machines, but most games developers do seem determined to take advantage of the very latest technology to make their releases as spectacular as possible. What do other readers think? Would you settle for less "impressive" games that could run on older, humbler Macs? Do you feel too much pressure to upgrade to the latest model? Or should there be cheap-and-easy upgrades...?

Upping the grade?

I'd read somewhere that Apple was making available a version of the PowerPC Performas (6300 I think) just as the internal tray so it could

be used as a replacement for the insides of an LC/Performa 630. Has someone been telling me lies or is it something that may end up only being available in the US? Have you heard anything like this?

David Hassall
Macclesfield, Cheshire
via FutureNet

News to us – and I'd be very surprised. Such a card would be likely to cost more than a Performa 6300 anyway, and that motherboard is already outdated technology as far as Apple is concerned. With the whole Mac range switching to PCI components from the older NuBus connection standard, upgrade paths are becoming less clear. Watch for a round-up of currently available upgrade options in MACFORMAT soon.

Collapse of multimedia?

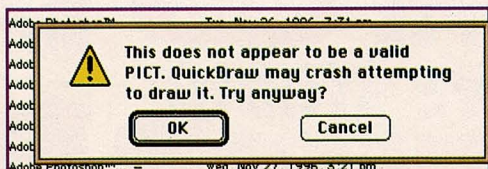
As a multimedia practitioner, your news story (about cutbacks among CD-ROM producers) in MACFORMAT 45 should fill me with some measure of alarm. However, the woes that CD-ROM producers are facing should not come as too much of a

surprise to us all.

Your piece alludes to the failure of the distribution and marketing side of the CD-ROM production cycle being a main culprit, and one has to say, who wants titles such as *The Unexplained*? A trip to WH Smith's and a visit to the magazine racks will tell you what is currently popular and where those that have money are spending it.

But one thing you fail to mention, and it surprises me slightly, is the advent and blitzkrieg onslaught of the Internet. It seems to me that the meteoric rise in popularity of this communications medium has really taken the wind out of the sails of commercial CD-ROMs. And let's face it, how many of us have bought a title, viewed it once or maybe twice and then put it away and never looked at it again?

CD-ROM titles may be fine for archive use, as educational tools, delivery medium and so on, but as commercial titles they either have to hit the nail on the head in terms of saleability (be trendy and timely) or maybe ought to include some form of crucial game-play. The most



Here's one our Art Ed got from Photoshop when trying to open a graphic file. Nice to get a warning for a change... Has your Mac given you a silly message? Grab it using **[command] [shift] 3** and send it in via disk or e-mail.

Alan John Stewart
52 Southfield Road
Eastfield
Cumbria
G68 9DQ

Kids are not STUPID

Dear MACFORMAT

Kids are not stupid why did you give Tomy Comfy Keyboard 77% when kids can use real keyboards I would give it 0 I am aged 7 and have been using a full size keyboard for 2 years on an Apple Macintosh my sister is aged 3 and she has been using the full sized keyboard as well. We don't need to be given silly baby things just because adults think we can't do things they find difficult.

signed

Alan Stewart (age 7)

P.S. I wrote this by myself on an Apple Macintosh using Claris Works.

A comment on our review of Tomy's ComfyKeyboard in MACFORMAT 44. All I can say is that the ComfyKeyboard is not for writing letters; it's designed specifically for play and interaction with the ComfyLand range of interactive storybooks. Personally, I'd find it rather sad if kids couldn't play, however accomplished they become.

successful CD-ROMs in our household have been the KidPix Studio disc and the Brøderbund books. The *Unexplained*? Nice graphics, shame about the market research.

Terry Burgess
via FutureNet

For my money, a CD-ROM is simply a delivery medium like a floppy disk. What counts is the quality of the content. Thanks to the amount of data CDs can hold, that content could include all sorts of multimedia, but I think what we're seeing is a realisation that even the glitziest multimedia software still needs to be good to sell. As for the Net, I'm not sure it is such a rival to CD-ROM yet – it's still too slow and too clunky... and there aren't quite enough people there yet. Any other views? **MF**



There was an error in reading this error message. String Resource = 1013; String = 1.

OK

Last issue we mentioned that error messages are displayed by applications when they receive error codes from the System. Here's one that didn't quite make it! It's from a shareware synchronisation program called *Synchronize 3.3.2*, courtesy of Chris Poel in Chiba, Japan. E-mail your silly message to macformat@futurenet.co.uk with "Silly" in the subject line.

The real problem with demos...

In MACFORMAT 44 Laurie Climo of Taunton, Somerset, wrote to you about demo programs on your CD causing all sorts of havoc with her system. I'd like to add my plea to you to no longer offer demos which either don't work or do not allow the demo to be uninstalled.

Browsing through the cover disk of MACFORMAT 44 I tried to install *Conflict Catcher 3*. No dice – just an error message: "An error occurred while installing. The destination volume has been left untouched". I should have stopped there! I next installed *Now Utilities*. About 89 files were installed all over my hard disk – in my Extensions folder, in my Control Panel folders... Everywhere! When I tried to open the Read-Me files my System bombed... After restarting I began removing all 89 files. It took me about half an hour to find them all and throw them in the Trash.

I did a final "Find File" based on files saved

today to discover one "invisible" folder containing two Extensions. Now what? I can't trash them 'cause they're invisible, but I don't need them! I have learned something about "Now" though.

Please, please, please. Don't accept any demos that don't have an uninstall. It is unacceptable to have this gratuitous rubbish messing up my hard disk.

Les Bolingbroke
Arnex-sur-Nyon, Switzerland via FutureNet

We do test all the demos and software we include on our Cover CDs, but it is impossible to test them on every conceivable combination of hardware and System version. That's why we recommend that you make a back-up of your hard disk before installing any new software – from Cover CDs or anywhere else.

There's a step-by-step guide to using instal-

lers this issue on page 64. One thing will make it easier to find newly-added files: before you run anything from a Cover CD, use the **Label** menu to label all your existing Extensions, Control Panels and Preferences files – everything else too, if you like! – with a label of your choice. If you view by label later, you'll easily be able to spot files that weren't there before.

Invisible files, though, are another matter. Some demos use these as part of their "time-limiting". Many installers do give you a guide to what they're installing and where it's going, though that guide is often accessible only via a "Custom Install" dialogue. But it's true: too many don't tell you anything. In future, we'll make a point of giving you as much information as possible in our Disc pages about what an installer will put on your hard disk.

Uninstallers do sound like an ideal catch-all solution though. What do other readers think?



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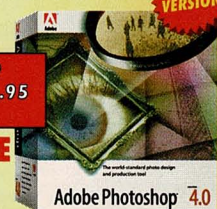
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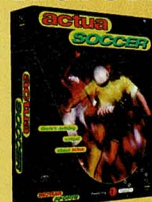
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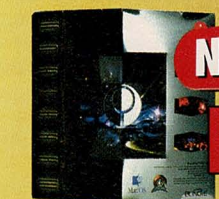
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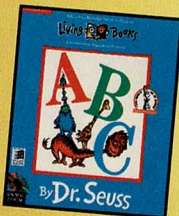
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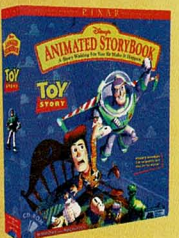
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MACFORMAT *Reader Awards*

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1996: a year of great strides on the Mac scene and an explosion of fine products. But which were the stars? MACFORMAT's Reader Awards deliver the verdict of the people who matter most – you!

Inside...

- Hardware Awards begin page 29.
- Creative Awards start on page 31.
- Software Awards, see page 34.
- For the overall Gold Award winners and your chance to save money on all winning products, turn to page 37.
- For up-to-date product information, see our authoritative Buyer's Guide, starting on page 121.

The past 12 months have seen unprecedented change and activity on the Macintosh scene. At one time Apple itself looked to be in perilous condition, but the company not only bounced back, it blitzed the market with a surge of innovative products and new technologies, delivering more power and better value for money than ever before.

What's more, Mac-compatible computers made by other companies arrived in numbers, particularly the growing range from Power Computing, as well as models from DayStar, Umax and Motorola. It wasn't just that the choice of Mac compatibles was wider, either; there was tremendous growth in the speed of the machines themselves. The latest 200MHz 604e machines put huge power into the hands of designers, multimedia authors

and Mac artists, and the arrival of multi-processor hardware – and software – promises even more power and performance for the future. Perhaps more importantly still, the power of entry-level systems rocketed, bringing more to the home user than almost anyone could have dared imagine just a year ago.

And, of course, software and hardware companies demonstrated their continuing commitment to the Mac platform with a steady flood of new and upgraded products, including the first appearance on the Mac of established names such as Corel, Gremlin and Team 17.

And the winners are...

But no-one is more dedicated to the Mac than a Mac owner, and the ultimate judgement on a product is the verdict of

the people who use it. That's why we asked you, our readers, to vote for *your* favourite Mac products of 1996. We invited *you* to decide what were the real stand-out products of the year. What offered the best combination of features, ideas and value for money? What really established a benchmark for rivals to aspire to? What stood the crucial test of time and real-world use?

We divided the Mac universe into three broad classes – hardware, creative products, and software – and then subdivided these into a total of 16 categories and asked you to vote for the top product in each category. We've now finished the mammoth task of collating all the voting forms you returned, and we can now announce the results. So join us as we celebrate the best Mac products of 1996 in the first MACFORMAT Reader Awards.

Best Mac

Until the arrival of the PowerMac 7600, there was a bit of a gap between the more modest, general-purpose Macs pitched at home and office users, often bundled and badged as Performas, and the more powerful machines designed for professional publishing, graphics, multimedia authoring and other hardware-intensive applications.

The 7600 plugged that gap neatly, combining a fast 132MHz 604e processor (in the latest version) with 16Mb of RAM, expandable to a massive 512Mb. It also has 2Mb of VRAM for driving large displays at high resolution (you can expand this to 4Mb) and an eight-speed CD-ROM drive. The 7600 also comes with AV capabilities, boasting stereo sound input and output, and both composite and S-video input ports. Oddly enough there are no video output ports – to output to video tape you'll need to add a PCI video-out board.

But that's another bonus with the 7600 – its expandability. There are three PCI expansion slots, which all accept both 7-inch and 12-inch cards. And as faster processors become available, you can add them easily because the chip is installed on a removable daughterboard.

Even with the arrival of Mac com-

PowerMac 7600/132

patibles, voting in this category was dominated by Apple machines, with the 7600 a clear winner. It scored 83% in our review in MACFORMAT 42, and the 7600/132 is now available for around £2,000. It's got enough raw power for just about any application, and while it's not as fast as the flagship 9500, it is about £1,500 cheaper – and £1,500 will buy you an awful lot of RAM. Put it this way – a 7600 with 128Mb will breeze through jobs that would leave a 9500, fitted with its standard 32Mb of RAM, gasping.

Apple seems to be tilting the 7600 toward office users too, by bundling *Microsoft Office* instead of the ubiquitous *ClarisWorks*. For a re-review of *Office*, see our Buyer's Guide, page 122.

If you want to buy this model, though, you may need to be quick. Even though the 7600/132 has only just replaced its predecessor – the 7600/120 – there is talk from Apple (see the News pages in MACFORMAT 44) that the 7600, along with the 7200, will be replaced early to mid-1997 by a new PowerMac 7300 machine. Meanwhile, the current 7600/132 offers an excellent balance between performance and price.



With its reasonable price tag, ample raw power and impressive speed, the PowerMac 7600 is the readers' choice of Best Mac.

Best Storage Device

Iomega first caught the Mac public's eye in 1995 with the launch of its revolutionary Zip drive.

Here was a drive that was little larger than a compact disc case, yet used 3.5-inch cartridges that could hold up to 100Mb of data.

Well, in 1996 Iomega did it again. Its new removable, the Jaz drive, didn't store 100Mb, but an astonishing one gigabyte. Not much larger than the Zip drive, its data access and transfer speeds matched those of many hard disks.

Until the advent of the Jaz drive, portable storage media were a clumsy necessity. They were slow, cumbersome and inefficient, yet they were the only way to transfer megabytes of information from one Mac to another, unless the Macs happened to be on a network.

The Jaz drive has really opened up the field though. For a start, its huge storage capacity is a terrific boon to designers and graphics professionals, who regularly need to transfer large scans and documents from one location to another – you could get a whole issue of MACFORMAT, high-res graphics included, onto a single Jaz cartridge. And Iomega's decision to license the technology to other manufacturers will have an important effect – the Jaz drive is now much more

Iomega Jaz Drive

likely to become an industry-standard format for removable drives.

And rightly so. The Jaz drive's sheer speed makes it more flexible than other removable drives too. With its ultra-fast access and data transfer times, it doubles as a very effective external disk drive – why buy a “real” external hard disk for your Mac when a Jaz drive is just as fast but portable and “infinitely expandable”? After all, a 2Gb hard disk can only ever hold 2Gb, but a Jaz drive can hold as many gigabytes as the number of cartridges you choose to buy. And with cartridges at around £90 each – and falling – they represent just about the cheapest storage medium on the market to date.

We tested 13 external storage devices in MACFORMAT 43 and were amazed to discover in speed tests that the £469 Jaz outperformed not only every other removable drive by a comfortable margin, but all of the magento-optical drives too. It ran at an impressive 87% of the speed of a benchmark 1Gb internal hard disk fitted to our test machine, a

PowerMac 7200/75. Small wonder, then, that we awarded the Jaz drive a massive 94% and that it scored so strongly here.



With such huge – indeed, infinite – storage capacity, it's no wonder the Jaz drive is top of your list.

Best Monitor

AppleVision 1710

There's no doubt that the bigger your monitor, the easier working with your Mac becomes. Most Macs are sold with 15-inch monitors, but designers, desktop publishers and many business users find 17-inch monitors much more useful. 17 inch screens mean less time-consuming scrolling, plus the ability to

see the big picture as well as the fine detail. And even in this quality market, the AppleVision 1710 stands out.

It uses a Sony Trinitron picture tube to produce its combination of excellent subtle tonal shading, sharpness and vibrant colours. It's a multisync monitor, which means you can use it at a variety of resolutions – the maximum is 1,280 pixels by 1,024. Many multisync monitors start to get fuzzy if you try to set the resolution too high, but with its "stripe pitch" of 0.26mm, the 1710 maintains its crisp quality even at the highest setting.

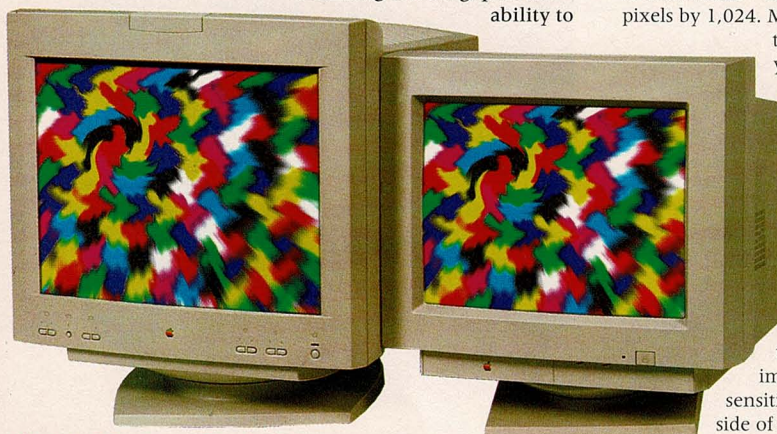
Another failing of cheaper monitors is "flicker". Higher resolutions really test the ability of a monitor to "refresh" the image before the photo-sensitive coating on the inside of the tube begins to fade, causing flicker. It all depends on the "refresh rate" – but the 1710's

high refresh rate of 75Hz ensures that the picture remains flicker-free at all times.

There's another useful feature, too – the 1710's "overscan" ability, which means it can use the whole screen area, rather than leaving that half-inch black border around the edge of your screen. This gives it a larger usable screen area than some rival 17-inch models.

You also get special colour calibration software. This works in conjunction with Apple's ColorSync system software. The idea is that each Mac peripheral – including monitors, scanners and printers – will have its own ColorSync "profile", enabling the System software to match the screen display to what your printer is capable of. The colour calibration software that comes with the 1710 also automatically adjusts the display to compensate for ageing – so you get consistent colour throughout your monitor's life.

When we reviewed the 1710 in MACFORMAT 40, it scored 92% and we concluded it was just about the best monitor on the market – and judging by your votes, you agree decisively. The 1710's list price of £831 makes it a pretty expensive purchase (the street price of around £750 is still a fair whack!), but considering you can spend hours a day looking at your monitor, it's a good investment.

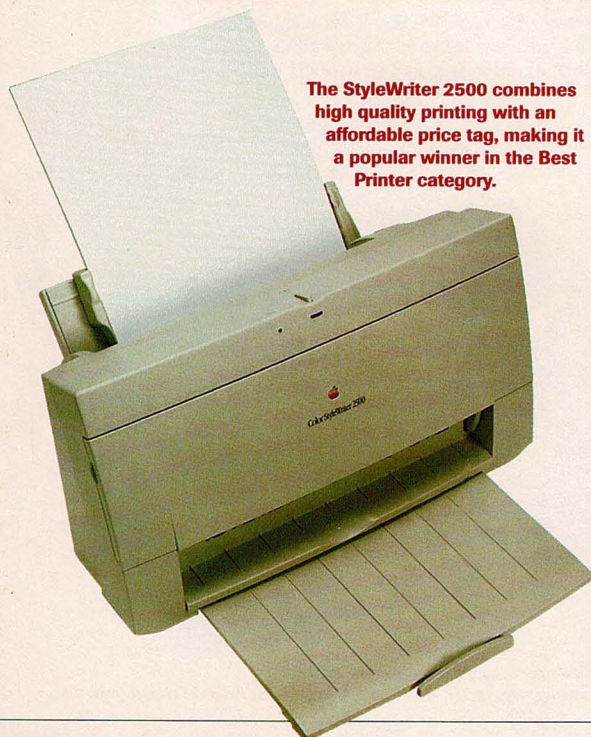


Want the big picture? The AppleVision 1710 (left) delivers it, plus a rock-steady display and sharp colours.

Best Printer

StyleWriter 2500

The StyleWriter 2500 combines high quality printing with an affordable price tag, making it a popular winner in the Best Printer category.



Back in MACFORMAT 38, we published a group test of colour inkjet printers, and concluded that the StyleWriter 2500, scoring 84%, was a big improvement over its predecessor, the 2400. You can get better output quality by going for more expensive models from Epson and Hewlett-Packard, but you do pay twice as much for it.

There's no doubt about it – for home and light office use, the 2500 strikes an excellent balance between performance and price. Inkjet printing has advanced tremendously over the past few years, and the software drivers themselves have played a big part.

It's the software that controls the print head, how the inks are mixed and the "dithering" pattern used to create the smooth, realistic tones on paper from the four separate colours. Apple's new generation of drivers have achieved much better colour accuracy – especially in the blue and green tones, usually the area that shows up any weaknesses.

Despite the fact that laser printers are getting cheaper each year, inkjet printers continue to offer equivalent performance

for far less money. The StyleWriter 2500, for example, prints at a resolution of 360 x 720dpi in both colour and mono – and even a 600dpi laser printer would be hard pushed to improve on its sharpness, and wouldn't be able to match the solid density of the blacks. Inkjet printers are quiet, too, and the Apple models in particular are remarkably compact – the StyleWriter 2500 takes up about half the space of a Mac and you could find space for it on even the most cluttered desk.

The important thing to note about inkjets is that they only perform at their best using special "coated" paper. And while you can print everyday black and white pages on ordinary photocopier paper, colour images will only look really good on the coated stock. Inkjet printers can prove a little expensive to run, too. The ink cartridges last well when used sparingly, but if you regularly print full-colour, full-page pictures, you could find yourself replacing them fairly frequently.

But what particularly impressed us was the price. At one time you had to pay a premium for the reliability of Apple products, but at around £359, the 2500 is right in there competing with the rest of them. Plus you get the undoubted style of the Apple design as opposed to the plain boxy design of many rivals.

Best Peripheral

This section was a broad one, encompassing anything from graphics tablets to flatbed scanners, and people inevitably rate gadgets and add-ons differently, according to their own particular needs. Nevertheless, two products ran away with the votes and clearly established themselves as two of the Mac market's most desirable peripherals.

The winner – by a short head – was the Global Village Teleport Platinum modem, which scored 92% in MACFORMAT 39. You know you're looking at something a cut above the rest the moment you take it out of the box. While most modems are styled like failed experiments from a sheet metal class, the Teleport Platinum has the subtle cream colour of the Mac, the same round-edged curved lines and the same solidity of build and attention to detail.

And you don't get the tacky-looking array of flashing LEDs that light up the front of lesser models. Instead, an on-screen progress bar reassures you that data transfer is carrying on, even when you're working with another application in the foreground.

But it's the Teleport Platinum's reliability in use that stands out. All modems are not the same. There's a lot of com-

Global Village Platinum

plex circuitry and software jiggery-pokery involved in swapping the tiniest scrap of data over phone lines. Although two modems may share the same specification, it's the quality of the circuitry and the stability of the software that can make the difference between dropping the connection and garbling the data, or sailing serenely through a file transfer without a hitch.

Like most modems on the market now, the Teleport Platinum is a fax-modem, meaning that you can send faxes directly from your Mac and receive them electronically, without ever having to commit a thing to paper. You also get OCR (Optical Character Recognition) software, which means that you can in theory generate an editable text file from any faxes sent to you. And you get all this for just £219.

We must, however, spare a mention for this category's very close runner-up, the Visioneer PaperPort scanner. A radically new approach to desktop scanning, it aims to make it easy to get anything off paper into your Mac. Costing £293 and no larger than a carton of cooking foil, it's designed to sit between your Mac and

keyboard. You insert the document you want to scan and the PaperPort "rolls" it through, drawing the image of the document on-screen as you watch. It's compact, it's effective and it's excellent value.



It was a close run thing, but the Global Village Platinum Modem is the overall winner of the Best Peripheral category. Nice colour too.

Best Drawing or Painting Program

Adobe Photoshop has become the yardstick by which all other image manipulation packages are measured. *Photoshop's* main purpose – editing and preparing photographic scans for printing – might seem fairly limited, but in practice it's almost invented a new kind of publishing and a new style of illustration. *Photoshop's* tools and innovations have enabled designers to build pictures into their magazines, multimedia applications and Web sites in much more imaginative ways than ever before. Thanks to *Photoshop*, real-world images can be made part of your publications, melding with the text and overall design.

Photoshop is only one of many image manipulation packages on the Mac – but it's the only one to combine professional features, ease of use, extensible architecture and industry-wide support. It was the right program in the right place at the right time, appearing as it did when the electronic publishing industry really took off. It's so much the industry standard how that many people don't talk about manipulating images, they talk about "Photoshopping" them.

Photoshop uses a system of transparent layers to enable "non-destructive" image

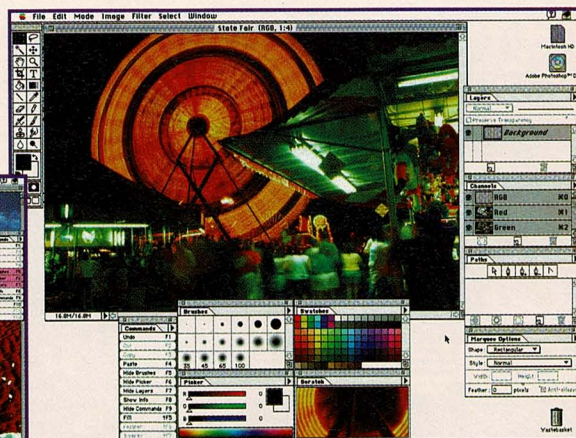
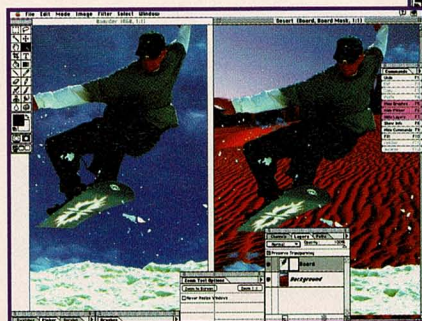
Photoshop 3

changes and high-quality compositing. It uses channels for precise colour control, and its magic-wand selection system makes cutting, pasting and moving irregular shapes easy.

Furthermore, with *Photoshop* "paths" you can produce complex cut-outs accurately. It supports just about every bitmap image format, and also CMYK colour – it can output CMYK images ready for four-colour printing, even automatically detecting non-printable colours.

This power though, comes at a price – both in terms of the cash outlay when you buy the software and the amount

you have to invest in your Mac. Manipulating high-res photorealistic images needs lots of RAM – at least 32Mb – and a fast processor. And the *Photoshop* learning curve is pretty steep, too. The reward, though, is an application that can produce spectacular graphic effects you still can't quite match any other way.



Channels, layers and paths are just three of the tools that make *Photoshop* the premier image manipulation package.

Best 3D Program Bryce 2

Most 3D programs are rather dull and time-consuming lessons in mathematics and geometry, with nothing much interesting to look at. In principle, you can create practically anything from a sufficiently complex assembly of polygons and textures, but this could take forever. *Bryce 2* takes a very different approach.

Rather than giving you a kit to assemble any object in the world, *Bryce 2* zeroes in on landscape creation. Then it specialises even further by restricting the extent to which you can manipulate the objects in your landscape. And yet, as a package it works amazingly well. Suddenly 3D is interesting, because with just an hour's work you can create a stunningly convincing artificial landscape. Instead of having to create shapes from scratch, you can select

professionally-created objects from libraries. You can choose mountains to place on your landscape, or rocks and trees, or use imported 3D objects. Then you can apply texture-mapping using "materials" to simulate differing terrains, reflective water surfaces and even fog. And you can choose from a whole range of spectacular skies to form the backdrop.



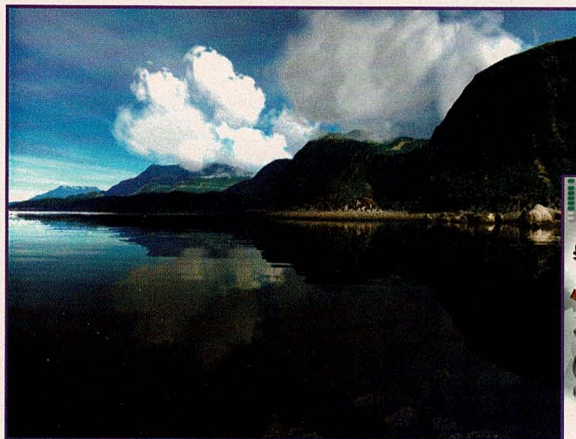
Save-disabled, watermark-protected demo.

The scale, spectacle and realism of *Bryce 2*'s landscapes is in stunning contrast to the artificial-looking, smooth-toned blandness of typical 3D images. You could spend weeks tweaking an image and it still

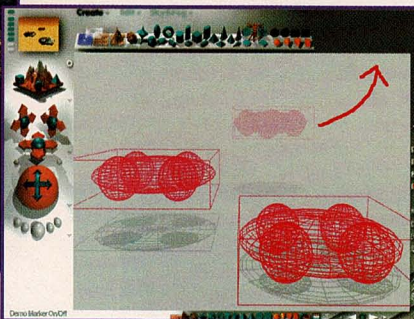
wouldn't look a patch on a *Bryce 2* landscape. Yet *Bryce* requires just the right degree of skill and finesse to get just the right result. Art *plus* fun, all for just £234.

This dramatic and unusual approach is carried through to the *Bryce 2* interface. It's one of those things you'll either love or hate. It bears no resemblance to the normal Mac interface, instead consisting of rendered 3D icons, often animated and often only appearing at all when the mouse pointer is in their vicinity.

For making 3D fun, *Bryce 2* earned 93% in MACFORMAT 38. You obviously agree with us – in the voting for Best 3D package it came out the clear winner.



Which is the greater work of art: *Bryce 2*'s 3D landscapes or its interface? Whichever, the images you get are first class.



Best Digital Media Package VideoShop

Desktop video (DTV) was once the exclusive reserve of broadcast professionals with rooms full of highly expensive kit. Not any more. The latest Macs have more than enough power for video editing and movie creation, and many are now even supplied with

video cards, enabling you to produce full-screen, full-motion video. As we saw in our cover feature last issue, film and TV production companies are taking advantage of this power and the new creative freedom it offers to take closer control over their productions.

In digital editing, your Mac captures the source video signal so that you can save it as a movie file – usually in QuickTime format – on your Mac. Once you've got all the files, or "clips", you need to make your movie, it's time for your video editing software to get to work. You can assemble the clips in any order, cut them,

split them up, apply smooth fades and transitions, add titles, merge voice-overs and effects, all just as easily – and as reversibly – as cutting-and-pasting in a word processor. Now almost anyone can produce a seamless and professional-looking video sequence, then save it as a QuickTime movie.

And QuickTime is becoming an increasingly important format, not just on the Mac but on the Internet too. It's even taking the PC world by storm, where Apple's movie file format appears to be winning the war with against the PC's own Video for Windows.

VideoShop, now owned by Strata, combines editing tools with special effects, 3D logo and title generation, compositing, MIDI support and an affordable price tag.

However, voting in this category was very close. The runner-up (by just a handful of votes) was *Adobe Premiere*, which is widely regarded as the industry-standard desktop video application. It has all the power and tools you need to create professional-quality movies, combined with a clean and friendly-looking interface. Neither is exactly easy to get into, but both put video editing right there on your Desktop. We look forward to the release of an upgraded version of *VideoShop* from Strata in 1997.



Hollywood? *VideoShop* is a non-linear video editor with all the power you need to create professional-looking movies.



Best Print Publishing Program

QuarkXPress 3.3

Since the release of *QuarkXPress* 3.3 there have been two new versions of its main rival, *PageMaker*, and the appearance of an innovative QuickDraw-GX-compatible upstart in the form of the innovative and impressive *UniQorn*.

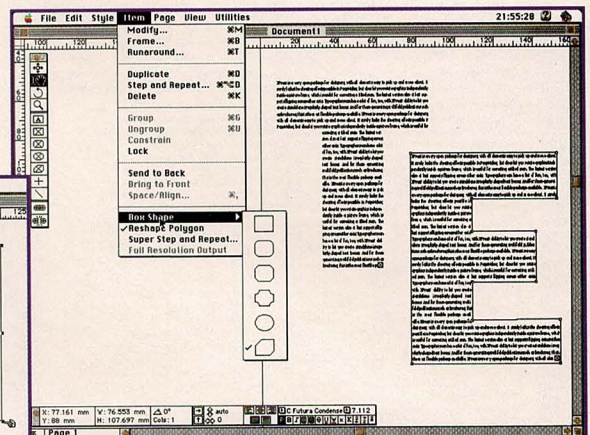
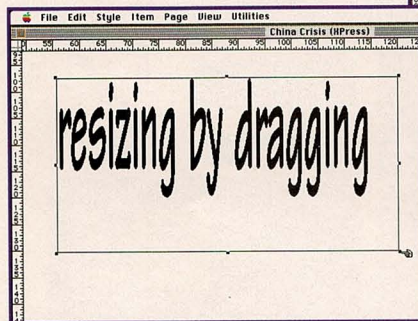
Despite all this, *XPress* remains by far the most popular print publishing program among MACFORMAT readers. Updates have been infrequent (we last reviewed *XPress* back in issue 25), the price tag is frightening (list price £1,169) and the Adobe bundle is now far more complete. So why is *XPress* still the favourite among the professionals?

For a start, *XPress* is brilliant. Its way of working is broadly analogous to the pre-Mac paste-up days of sticking various elements onto a page, but the degree of control it gives you over those elements and their arrangement is, frankly, astonishing when you think about it. Its text handling, page design tools and colour management capabilities are superb, and its extensible architecture makes it possible to add any of a vast range of XExtensions to give you still more specialised features and your preferred controls. It may be just a fancy front end for what is at heart a powerful PostScript editor, but what power! And how usable it makes

that power! Its rivals seem to recognise as much – with each upgrade their interfaces and controls are evolving towards something more and more *XPress*-like.

It used to be said that *PageMaker* made it easier to concentrate on broad layout and picture placement. *XPress* feels generally fussier – everything has to be in a box; you can't simply put stuff down on the page. But *XPress* really scores in its text-handling – and it's very difficult to inadvertently "lose" or delete text in *XPress*, while in *PageMaker* deleting a text frame in the middle of an article will wipe out that chunk of text forever.

It was *PageMaker* that brought the world DTP, but *XPress*'s support for a wide range of image formats, complex and detailed typographical control, and features like built-in colour separation support have made it the industry standard. You voted it the best print publishing program available in 1996.



QuarkXPress is expensive, but it's powerful, predictable and, to most Mac publishing professionals, it's like a second skin.

Best New Media Publishing Program

Director 5

Multimedia authoring has grown in importance over the past few years, and we can thank the arrival of the CD-ROM for that – and the huge popularity of multimedia educational, reference and entertainment titles. And in this market, one product reigns supreme.

Just as *QuarkXPress* and *Photoshop* are the industry-standard DTP and image manipulation packages, so *Director*, which scored 85% in MACFORMAT 41, rules the roost among multimedia developers. When companies advertise for authors, their first question is not about qualifications, but "Do you know *Director*?"

Using *Director*, you assemble a "cast" of objects which you choreograph against a "stage". Your cast members can then be moved about the stage or made to appear and disappear at set points in your movie via a "score" window, which displays the positions of all your cast members for each frame in the sequence.

There's a lot more to it than that, of course – in particular, *Director*'s buttons and its Lingo programming language. These enable you to add point-and-click interactivity to your productions – indeed, Lingo is such a powerful language

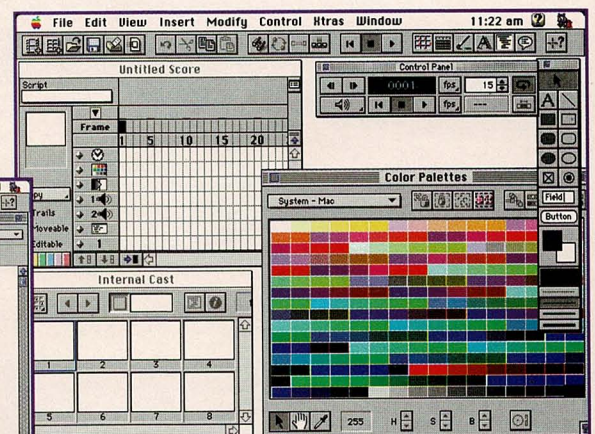
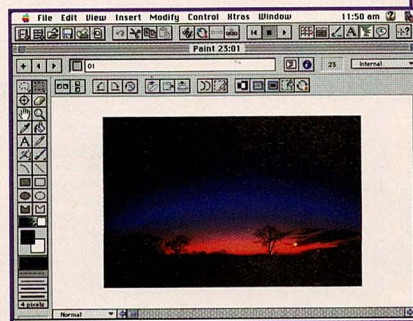
and *Director*'s basic structure so versatile that you can program rather good complex games, simply using *Director*.

Version 5, the latest, is quite a big improvement over its predecessors. It now offers editable text, better colour handling and an extremely good on-line help system. And *Director* now has "plug-in" technology, whereby third-party suppliers can produce additional tools, functions, transition effects and other enhancements. You also get debugging tools, good if you're working on Lingo-based productions.

Many CD-ROMs are created with *Director*, and with the development of the ShockWave Internet plug-in, *Director* has become an important Internet development tool too. For the time being at least, *Director* is the leading multimedia authoring tool. And, even at a cost of £1,174, it looks as if you think so too.



Check out our save-disabled demo version.



Director 5 is easy enough to use if you're a beginner, but also packs power for cutting-edge multimedia authoring.

Best Office and Productivity Program

ClarisWorks 4

When it was launched, the Mac turned the technical and tedious world of computing on its head. Here was a computer that was friendly and uncomplicated, and yet could do it all effectively, and with panache. This description just about sums up

ClarisWorks, and especially the latest version, *ClarisWorks 4* (92% in MACFORMAT 31). Take the word processor module, for example. Compared to some of its rivals (did we mention *Microsoft Word*?) it looks positively spartan. Good grief, there's not a toolbar in sight... The document window actually occupies a sizeable portion of the screen, and you can concentrate on the words you're writing instead of an interface only marginally less complicated than the cockpit of a 747.

And yet all the functions you need are

always there – but in menus or dialogues which you call up when you need them, not in row upon row of buttons that are always there, even when you don't.

The word processing module supports outlining, style sheets and word counts on both the whole document and the current selection.

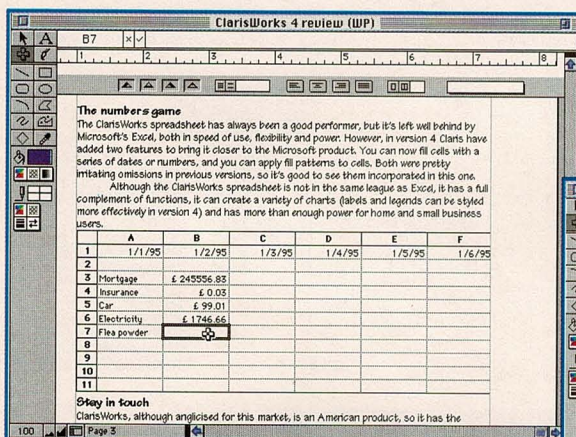
The spreadsheet offers a vast range of mathematical, statistical and logical functions. The database module supports the same functions, multiple layouts and summary calculations. The paint module supports PICTs, TIFFs, different resolutions and colour depths. The draw

module enables you to create re-shapable polygons, custom gradient fills and formatable text boxes – and offers enough layout control for proficient DTP work. And the whole lot is tied together in a core application that will run in as little as 1.4Mb of RAM. You can create and edit drawings in the middle of your spreadsheets, and incorporate spreadsheet frames into word processing documents. In short, *ClarisWorks 4* is flexible, friendly and powerful – all for just £152.

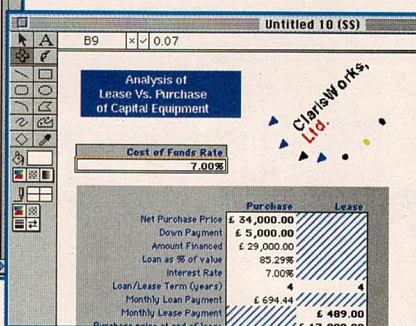
Version 4 has been a bit buggy despite numerous updates from Claris, but with its disarming simplicity and sheer usability, *ClarisWorks* does it all and does it well.



Full, time limited, working, interactive demo



How many integrated suites let you apply complex design effects to text, and DTP-style page layout to database forms?



Best Utility

Norton Utilities

Hard disks and floppies are supposed to be permanent storage media, but sometimes they're not as permanent as you'd like. Like any mechanical devices, they can suffer damage and either not work as they should or stop working altogether. When you haven't backed up those crucial files you've just

spent weeks completing, and your disk drive throws out a "disk error" when you're trying to copy or open them, it's time for that horrible sinking feeling.

Norton Utilities may be the answer. It's got thousands of people out of deep black pits of despair over the years by repairing damaged disks and extracting their precious data – and while it won't be able to do this 100% of the time, even one successful recovery can leave you feeling undying love and gratitude towards this market-leading program.

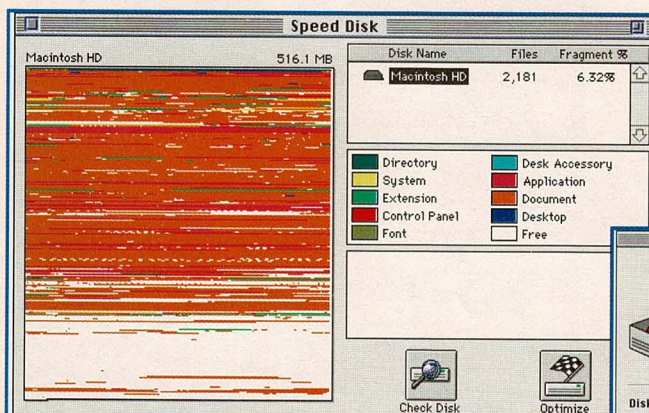
Norton Utilities isn't the only data recovery program in town, but over the years its comprehensive set of tools, success rate and

general renown have made it synonymous with data recovery. And although it hasn't exactly raced to keep up with the latest Mac technology (the version which earned a rating of 88% in MACFORMAT 42 isn't even fully PowerMac-native yet), it's still very powerful and useful.

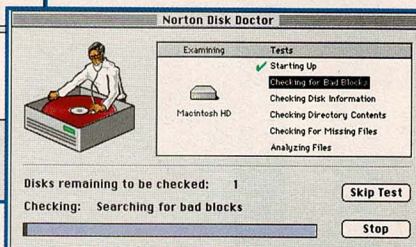
There are six individual programs in the package. *Disk Doctor* analyses and repairs damaged hard disks, *Unerase* enables you to recover files you accidentally deleted, *Volume Recover* will restore an initialised or crashed disks, *Speed Disk* will improve performance, *Fastback* is a simple but effective backup application, and *System Info* will tell you if your Mac is performing as it should.

There are other, smaller, utilities too. *DiskLight* tells you when your disk drive is being accessed and *Wipe Info* will destroy files permanently – useful for maintaining information security. Also, *Filesaver* bimbles around your hard drive during periods of inactivity, checking for imminent disaster.

The key to protecting your data properly is to back it up. In practice, this doesn't always happen, and *Norton Utilities* may get you out of lots of holes and pay for its £116 price tag many times over. As utilities go, that's a pretty good bet. •



A hard disk crash could lose you valuable data. *Norton Utilities* could recover your data and get you out of a very big hole.



Best Internet Program

Netscape Navigator

The Internet has been the big growth industry of the past two years, and mirroring the success of the Internet itself is the market-leading Web browser, *Netscape Navigator*. It's now apparently the world's commonest application, so it should come as little surprise to learn that in these Reader Awards, it completely trounced the opposition.

Although *Navigator* is a commercial program, few people will have paid for it, even though it's just \$49. That's not just down to dishonesty, but because there's always a new beta version available for download. *Navigator* is constantly being developed and improved, as are the specifications for the HTML programming language on which Web pages are based. Indeed, Netscape has helped define these, largely by building new tags into *Navigator* and relying on its overwhelming market dominance to make sure that Web authors build them into their pages – and hence they're bound to be included in the next version of the HTML specs. Sneaky.

But that's irrelevant for most Internet users. The fact is that *Netscape Navigator* is an extremely good all-in-one Internet application. You get a Web browser, e-mail and newsgroup reader, all in one

program – and, although you can buy dedicated e-mail and newsgroup programs from other publishers, *Navigator* handles these roles so well, there scarcely seems much point. Indeed, that's why it scored 94% in MACFORMAT 39.

One of *Navigator*'s strengths is that it's a browser which hardly needs instructions. The buttons in the toolbar are self-explanatory and this user-friendliness makes it a simple and unthreatening environment for Net newbies.

Netscape Navigator may not have the browser market to itself for much longer though. For one thing, it's never been

entirely rapid or bug-free. For another, Microsoft's *Internet Explorer* is catching up fast. *IE3* supports all the Netscape-specific HTML tags, as well as those expected to appear in the next set of HTML standards. And it's completely free. But for now, *Netscape* stands proud against the mighty Microsoft, and good luck to it.



Netscape Navigator combines a browser, e-mail and newsgroup handling – everything you need is contained here.

Best Multimedia Title of 1996

Encarta 96

There are thousands of multimedia CD-ROMs on the market, but only one has become a household name – Microsoft's *Encarta*. This might be because *Encarta* keeps turning up bundled with new Macs. But then it might be because it's simply the best multimedia encyclopedia there is, for just £50.

Encarta is basically a large collection of illustrated articles. The illustrations may be diagrams, animations, captioned photographs or QuickTime movie clips. And these articles contain words or phrases highlighted in red to indicate that they are linked to other, related articles. This enables you to browse a whole world of knowledge by following the links that interest you and proceeding at your own pace. You can also make notes about what you've read and leave bookmarks to come back to it later.

All your explorations will need a starting point, though, and in *Encarta 96* you have several options. There are the themed "guided tours", which lead you through a series of articles on a given subject – or you can start with a specific area. You can also search by keywords, or visit the media library to look through *Encarta*'s photographs and videos.

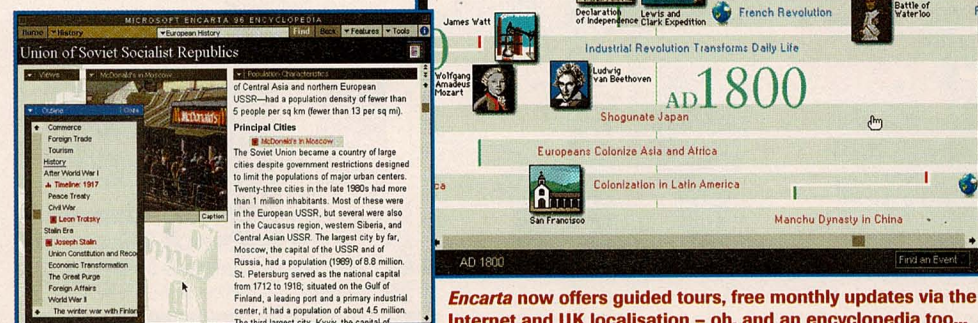
One of *Encarta*'s strengths is its avail-

ability in "localised" versions. It might be an American product, but you needn't worry that British History will be compressed into a single 100-word article, or that Babe Ruth will get a bigger biography than Winston Churchill. That's because you can get a UK version in which "football" doesn't have to be differentiated from "soccer" and John Major gets as many mentions as Bill Clinton (for what that's worth).

There are many multimedia encyclopedias on the market, but at £50 *Encarta* remains the best, thanks to its logical interface, vast store of information and

UK localisation. A new innovation for *Encarta 96* was free on-line updates – simply pop over to the *Encarta* site every month (<http://www.microsoft.com>) to collect the new articles.

We gave *Encarta 96* a rating of 83% in MACFORMAT 42, and it was your clear favourite in this category.



Encarta now offers guided tours, free monthly updates via the Internet and UK localisation – oh, and an encyclopedia too...

Best Game of 1996

Marathon 2

The Marathon is not, as you might suspect, a tasty chocolate comestible, recently renamed, but a giant spaceship filled with dark corridors, eerie sounds, flaming lava and the blood and guts of dead aliens called Pfhors. Actually, the blood and guts part will only happen if

you can master your weaponry and learn the tactics of survival before the Pfhors do to you what you're supposed to do to them.

The original game was extremely popular, combining real-time 3D arcade action with some very challenging puzzle-solving. Or should the word be "frustrating"? Version 2 improves on the original in several ways, including a much faster game engine, larger screen area and improved sound effects. The complex puzzles are gone, too, and have been replaced by simpler "find-the-switch"

style puzzles, which actually seem to suit the nature of the game better.

The real-time textured 3D though, places rather substantial demands on your Mac's hardware, so it's just as well that you can customise the display extensively to suit your system.

But the game tactics are one of the highlights. For a start, the levels are large and often hazardous, even without the hostile intervention of the Pfhors – and your relationship with the ship's inhabitants is different, too. In the original version they played a minor role, but in *Marathon 2* they have minds of their own. They fight with you against the Pfhors, but if you do shoot more than a couple of your allies by accident, you may well find them turning their guns on you. Restraint is important too. Charge in with guns blazing, and it could well be the last thing you do. The Pfhors are intelligent and just as averse to being blown up as you are.

Marathon 2 has huge longevity. Even after you've completed it you're going to keep going back to it at harder difficulty settings, and you won't be satisfied until you've found all the "secret" bits you know are there. To top it all, up to eight can play each other over a network.



Four level, fully playable demo with network game.



Guns at the ready? The Pfhors are out to get you, and they may just prove to be more intelligent than you are...



Best Shareware Program

GraphicConverter

If *Adobe Photoshop* is the king of high-end image manipulators, then *GraphicConverter* is the undoubted ruler among shareware graphics utilities. Widely used in industry, *GraphicConverter's* main function is to convert graphics files from one format to another, and it can open a

stupendous number of different image files – then do useful things with them.

It's at its best when handling bitmap formats, and can open obscure PICT and TIFF variants as well as a vast range of PC file formats.

Although it has only very basic painting tools, you can still use *GraphicConverter* to carry out some very useful work on your images. You can change contrast and brightness, resolution, image size and colour depth. You can also carry out bulk "batch" conversions on whole folders full of files. Simply locate the

source files, choose a destination folder and output format and set it to work.

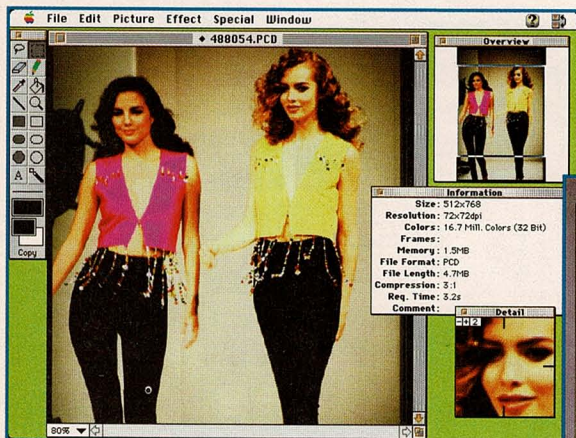
GraphicConverter is also very good at handling GIFs. You can use it not only to convert PICTs, TIFFs and other bitmap images to GIF format, but also to set the transparent background colour for GIFs that you want to work as cut-outs on your Web pages.

And if you have a good root around the menus, you'll find some other very interesting goodies. These include a Slideshow function, where you can examine all the pictures in a folder and discard the ones you don't want to keep. There are also options for choosing a dithering pattern when reducing the colour depth of images, and some basic photo-manipulation filters are included.

You wouldn't use *GraphicConverter* to create images, but as a tool for converting them from one format to another, carrying out minor editing or preparing them for Internet use, it's got an amazing array of very useful functions for only \$35. But author Thorsten Lemke isn't one to rest on his laurels, and although it already handles formats and conversions that you couldn't deal with in any other way, it's undergoing constant development. A hands-down winner.



Full version 2.5 in the Reader Awards folder



GraphicConverter can open just about any bitmap graphic format, and it's useful for GIF creation and editing for the Net too.



Gold Awards 1996

As well as the 16 individual categories whose results we've seen over the last eight pages, there are three more accolades to be announced in the MACFORMAT Reader Awards. They're the ultimate honours, the richest prizes – but they're not awards you've voted for. Or at least, not directly.

These extra prizes are the MACFORMAT Gold Awards, and they go to the single product in each of our three main award sections – Hardware, Creative, and Software – that won the highest number of votes. Simple as that. It's not a matter of a product simply beating its rivals within its own category and being voted best Mac, storage device, monitor, printer or peripheral; it means attracting such broad acclaim that it out-polls *all* the Macs, storage devices, monitors, printers and peripherals in the awards voting. It means the product is such a stand-out in its field that it towers above *other* related fields as well.

So what products did you judge to be world-beaters in this way? Here are those results in full.



Best Hardware Product
Finishing in third place, the Sony 17sIII monitor. In second place, the winner of our storage category, Iomega's Jaz Drive. But the winner by a convincing margin, the AppleVision 1710 monitor.



Best Creative Product
A close tussle here for second between third-placed *Bryce 2* and eventual runner-up *Adobe Photoshop 3*. But the clear winner, reflecting its dominating position in its industry, is *QuarkXPress 3.3*.

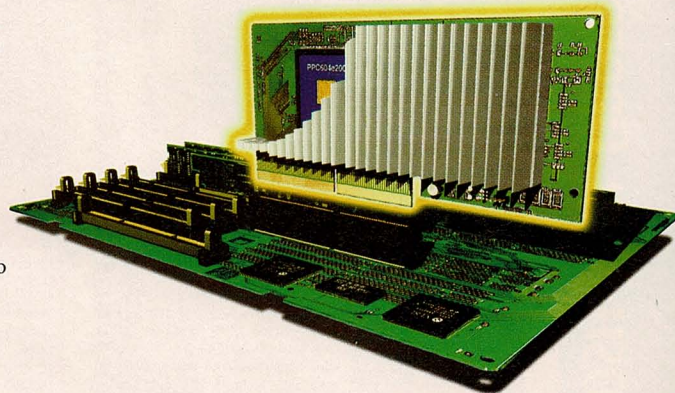


Best Software Product
A broad category, but an overwhelming win. Beating *Norton Utilities* and *ClarisWorks 4* into third and second place respectively, the winner by a huge margin is our Best Internet Program, *Netscape Navigator*.

Some surprises, perhaps, but what is interesting about all 19 MACFORMAT Reader Awards is that all the winners make sense. In some awards decided by "experts", you sometimes wonder whether politics plays a part or some hidden agenda sways the results. In some Mac industry awards, for example, Apple inexplicably keeps missing out on the honours. Not here. The people have spoken. And in the judgement of those who really count – those who use a Mac every day – these products are the cream of 1996. Congratulations to the makers, developers and distributors, and thanks to all of you who voted.

MF

Everyone who voted had a chance of winning a MAC-celerate 180MHz PowerMac upgrade card, courtesy of Gordon Harwood Computers. For the lucky winner, turn to page 141!



Save money with MF

The top products of 1996. Impressive collection, isn't it? If you've been thinking of buying a new Mac, monitor, or printer, or a 3D program, or *any* Mac-related product, perhaps you now have a clearer idea of what you want. Or perhaps you've been putting off taking the plunge. Either way, how would you like to save money when you buy any of the top Mac products of the year?

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- **Gasteiner** (tel. 0181 345 6000, fax 0181 345 6868): Free-of-charge delivery to customers on all MACFORMAT Reader Award winning products.
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SOFTWARE - Mac OS 7.5.3, Best of European Soccer, Apple Telecom 3.0, Ultimate Human Body, Apple Video Player, Aladdin Activity Centre, Lion King Story Book, Acrobat Reader, Toy Story Preview, At Ease, Grolier MultiMedia Encyclopaedia, ClarisWorks4.0, Claris Impact, Claris Organiser, Internet Connection Kit, MacLink Plus, Full Throttle, HyperCard Player, Descant, Performa Clickart, Thinkin' Things 3, Sammy's Science House, PowerPete.



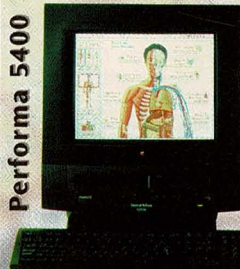
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SOFTWARE - Mac OS 7.5.3, The Best of European Soccer, Apple Telecom 3.0, The Ultimate Human Body, Apple Video Player, Aladdin Activity Centre, 120 Letters, Lion King Story Book, Acrobat Reader, Toy Story Preview, At Ease, Grolier MultiMedia Encyclopaedia, ClarisWorks4.0, Internet Connection Kit, MacLink Plus, Performa Clickart, Full Throttle, HyperCard Player, Descant, Thinkin' Things 3, Sammy's Science House, PowerPete.



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SOFTWARE - Mac OS 7.5.3, Avid Cinema, Adobe Photodeluxe, PowerGoo, Cubasis AV, Adobe PageMill, Dabbler, Best of European Soccer, Apple Telecom 3.0, Ultimate Human Body, Apple Video Player, Aladdin Activity Centre, Lion King Story Book, Acrobat Reader, Toy Story Preview, At Ease, Grolier MultiMedia Encyclopaedia, ClarisWorks4.0, Claris Impact, Claris Organiser, Internet Connection Kit, MacLink Plus, Full Throttle, HyperCard Player, Descant, Performa Clickart, Thinkin' Things 3, Sammy's Science House, PowerPete.



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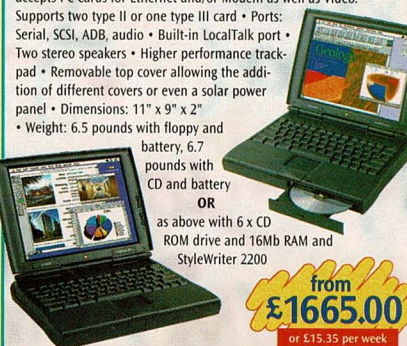
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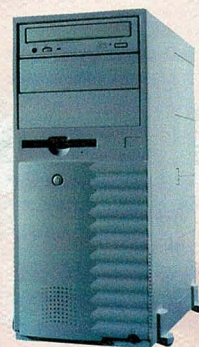
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- 32Mb expandable to 160Mb
- 256K Level 2 cache
- 2Mb EDO DRAM exp to 4Mb
- SVGA monitor port
- 2.5Gb SCSI Drive
- 8 * CD ROM drive
- Mouse and keyboard
- Optional Ethernet
- 5 PCI slots, 5 drive bays
- 16 bit stereo
- Five year limited warranty

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PowerPC
StarMax

StarMax 4000/160 or 200

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- 16Mb expandable to 160Mb
- 256K Level 2 cache
- 2Mb EDO DRAM exp to 4Mb
- SVGA monitor port
- 1.2Gb SCSI Drive
- 8 * CD ROM drive
- Mouse and keyboard
- Optional Ethernet
- 3 PCI slots
- 16 bit stereo
- Five year limited warranty

DESKTOP
STARMAX 4000/160
£1995.00
or £18.40 per week

DESKTOP



DESKTOP
STARMAX 4000/200
£2295.00
or £21.17 per week

All prices exclude the monitor but include a keyboard

These prices are subject to change, please call



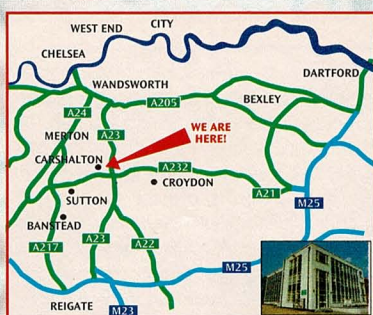
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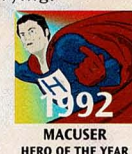
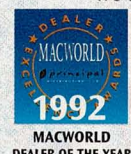


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NSWR	Nisus Writer 4.0 (multiple languages capability)	£99.00
THDR	SpellCatcher (spellchecker, works in all applications)	£45.00
WRNB	Write Now 4.0 (fast, includes Correct Grammar)	£39.00
WDPF	WordPerfect 3.51 (fast, fully native now owned by Corel)	£119.00

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ACTA	ACT! (excellent contact management)	£149.00
CORG	Claris Organiser (full featured new database)	£65.00
FLMR	FileMaker Pro 3.0 (now with relational features)	£149.00
INFG	InfoGenie (info organiser, supercedes QuickDex)	£45.00
NOWB	Now Up-To-Date 3.6 & Now Contact 3.6 Bundle	£49.00
TPBP	TouchBase/DateBook Bundle (contact & calendar)	£35.00

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CLWR	ClarisWorks 4.0 (market leading integrated package)	£89.00
DLTG	DeltaGraph Pro v4 (best graph and chart program)	£99.00
EXCL	Microsoft Excel 5.0 (market leader, great features)	£249.00
UGMSF	Microsoft Office 4.2 (Word, Excel, PowerPoint) cross trade	£185.00
WRKS	Microsoft Works 4.0 (WP, DB, Comms, Draw, Sheet)	£85.00
MCMY	MicroMy 4 UK (home accounts/budgeting package)	£65.00
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PER8	Persuasion 3.0 (high end presentations with outlines)	£245.00
PWPT	PowerPoint 4.0 (powerful, intuitive, easy interface)	£265.00
SINQ	Route 66 (road routefinder, includes UK map)	£45.00

GRAPHICS

PHSPB	Adobe Collection (Photoshop, Illustrator, Dimensions)	£525.00
CNVS	Canvas 5.0 (long awaited new version)	£345.00
CLDW	ClarisDraw (powerful, easy to use draw package)	£109.00
UGCRM	CorelDraw 6.0 (trade in from any graphics package)	£99.00
ADIM	Dimensions (Adobe's 3D extension for Illustrator)	£109.00
DBLR	Dabbler 2.0 (great beginners paint prog.)	£49.00
PSER	Fractal Design Poser (create human figures)	£125.00
FRND	Freehand 7.0 (professional PostScript drawing & text)	£299.00
INF3D	Infiniti-D 3.1 (leading 3D modelling & rendering tool)	£349.00
ILST	Illustrator 6.0 (pro PostScript drawing, text & layout)	£295.00
KPTG	KPT Goo (distortion special fx for Photoshop images)	£45.00
KPTK	Kai's Power Tools 3.0 (amazing filters for Photoshop)	£89.00
KPTV	KPT Vector Effects (Illustrator/Freehand FX Plug-Ins)	£89.00
KPTC	KPT Convolver (adds power and ease to Photoshop)	£89.00
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MIMX	Maps in Minutes (wide range in Illustrator or Freehand)	£75.00
MCAD	MiniCad 6.0 (native professional 3D design & analysis)	£495.00
RYDS	Ray Dream Studio (3D design, modelling, animation)	£199.00
PHOD	PhotoDeluxe (cut-down Photoshop for non-professionals)	£79.00
PHSP	Photoshop 4.0 (special offer price - while stocks last!)	£395.00
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TRBC	TurboCAD 2D/3D (budget but powerful CAD package)	£105.00
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CBX	Color Images (25 CDs of quality photographs)	£110.00
CBGB	Color Gallery II (15000 clip art images)	£49.00
FNTE	Fontographer 4.1 (best professional font creator)	£299.00
PMKR	PageMaker 6.5 (power and ease of use)	£425.00
QKQZ	Quark Xpress 3.32 (inc. free QXTtools)	£649.00

GRAPHICS AND PUBLISHING SOFTWARE

£89 KAI'S Power Tools

£119 Adobe Photoshop

£295 Adobe Illustrator 6.0

£649 QuarkXPress

£425 Adobe PageMaker 6.0

£395 Adobe Photoshop 4.0

£325 TurboCAD 2D/3D

£525 Adobe Collection

£199 Cross Trade: Freehand 7.0

£299 Cross Trade: Fontographer 4.1

£159 Cross Trade: XRes

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24 bit colour single pass

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QKX Quark Xtensions (we carry a wide range) please call

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EC5H	Epson Stylus XL A3 (A3 colour inkjet, non PostScript)	£895.00
HP34	HP Deskjet 340 (portable colour inkjet)	£179.00
HP60	HP DeskWriter 600 (superb new inkjet, Appletalk)	£149.00
HP65	HP DeskWriter 660c (colour and mono in one)	£229.00
HP86	HP Deskjet 850c (higher speed, 600dpi mono, 300 clr)	£335.00
PWPR	PowerPrint (driver and cable for non-Apple printers)	£79.00
STYS	StyleScript (print PostScript to StyleWriters)	£79.00

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S21X	Radius PrecisionView 21	£1495.00
SN15B	Sony 15" Trinitron Monitor CPD 15SF1	£335.00
SN17B	Sony 17" Trinitron Monitor CPD 17SF2	£565.00
FRMG	Formac 17" Trinitron Colour Monitor	£449.00

SCANNING

AFSS	Agfa SnapScan (300 * 600dpi, 24 bit colour)	£275.00
AFST	Agfa StudioStar (600 * 1200dpi, 30 bit colour)	£645.00
ST11	Nikon ScanTouch AX 110 (600 dpi desktop inc Photoshop)	£295.00
ST2A	Nikon ScanTouch AX 210 (1200 dpi desktop inc Photoshop)	£675.00
COOL	Nikon CoolScan II (35mm slide scanner)	£895.00
UVSA	Umax Vista S6 (600dpi)	£269.00
UMPLP	Umax PowerLook II Pro (36bit 1200*600dpi)	£1599.00
OMPP	OmniPage Pro 6.0 (OCR directly into applications)	£369.00
PPVX	PaperPort VX (greyscale desktop OCR and scanning)	£245.00

DIGITAL CAMERAS

FDSA	Fuji D57 (MacUser Best buy winner)	£499.00
KD25	Kodak DC25 Digital Camera (point & click, auto exposure)	£329.00
KD50	Kodak DC50 Digital Camera (autofocusing, 3 * zoom)	£625.00
PDCA	Polaroid PDG200 (million pixel digital camera)	from £1849.00

COMMUNICATIONS

MROL	Motorola 3400 (MacUser Best Buy 28.8 baud)	£125.00
SPRS	Sportster FaxModem (28,800 baud, BABT approved)	£149.00

DATA STORAGE

d2 External Drives	Syquest EZFlyer
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ATMC	ATM Deluxe (manages and anti aliases fonts)	£49.00
EASE	At Ease 3.0 (secure Finder replacement)	£35.00
CPTV	Captivate (professional screen capture utility)	£52.00
INUV	Conflict Catcher 3.0 (INIT manager and more)	£55.00
NDBP	DiskDoubler.Pro (Disk.Auto and Copy Doubler)	£49.00
HDTK	Hard Disk Toolkit (the best formatter and checker)	£109.00
NUME	Norton Utilities 3.2 (best selling utilities package)	£65.00
NOWU	Norton Utilities 6.5 (suite of essential utilities)	£59.00
POPF	PopUpFolder (view folder contents with submenus)	£29.00
QCKY	QuickKeys 3.5 (macro maker, time saver utility)	£59.00
RAMD	RamDoubler (actually doubles your available RAM)	£45.00
SPED	SpeedDoubler (greatly improves performance)	£45.00
RASP	RamDoubler & SpeedDoubler Bundle	£65.00
THDR	SpellCatcher (spellchecker, works in all applications)	£45.00
SFDL	Stuffit Deluxe (famous file compression program)	£65.00
SUIT	Suitcase 3.0 (manage your font menu)	£49.00
HDTT	Turbo Toolkit (speeds up startup and Finder)	£45.00

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OPDT	DeskTape (treats DAT as if it were a 2Gb drive)	£199.00
MPRA	MacPrefect (secures most aspects of the Finder)	£45.00
PRSB	Personal Backup (best value backup on the market)	£29.00
RTSP	Retrospect 3.0 (powerful archival backup)	from £125.00
SAM	SAM 4.5 (Symantec's anti virus utility)	£55.00
VIRX	Virex 5.66 (best virus tracer & eradicator of all)	£59.00

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AFDK	After Dark 3.0 (best selling screen saver)	£18.00
LTSS	Looney Tunes (famous cartoon screensaver)	£17.00
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TYEN	Typing Instructor (good training from basics to touch)	£29.38 (£25 inc VAT ex VAT)

CD ROM

EDUCATION		
ARTT	Arthur's Teacher Trouble (interactive story book)	£28.20 (£24 inc VAT ex VAT)
ARTB	Arthur's Birthday (more Arthur)	£28.20 (£24 inc VAT ex VAT)
CRMR	Creative Writer (DTP for kids)	£25.85 (£22 inc VAT ex VAT)
FNARD	Fire Artist (great fun paint program)	£25.85 (£22 inc VAT ex VAT)
LJZCD	Logical Journey of the Zombinies (rave reviewed)	£28.20 (£24 inc VAT ex VAT)
HHHS	Harry and the Haunted House (the new best seller)	£28.20 (£24 inc VAT ex VAT)
KDPCD	KidPix Studio (KidPix plus animation)	£28.20 (£24 inc VAT ex VAT)
WTSCD	Walter's Toyshop (storytelling, music, rhyme)	£29.38 (£25 inc VAT ex VAT)
RUFF	Ruff's Bone (adventures with Ruff the dog)	£28.20 (£24 inc VAT ex VAT)
HARECD	Tortoise and the Hare (the epic race)	£28.20 (£24 inc VAT ex VAT)

REFERENCE

3DAT	3D Atlas (simply wonderful)	£45.83 (£39 inc VAT ex VAT)
MAGCD	Art Gallery (Microsoft's tour of the National)	£34.08 (£29 inc VAT ex VAT)
BKSCD	Book Shelf (superb, for everyday reference needs)	£45.83 (£39 inc VAT ex VAT)
CINI	Cinemania '97 (19000 movie reviews and more)	£28.20 (£24 inc VAT ex VAT)
DINO	Dinosaurs (the "must have" CD of the year)	£29.38 (£25 inc VAT ex VAT)
NCR1	Encarta '97 (fantastic multimedia encyclopedia)	£41.03 (£35 inc VAT ex VAT)
GRLCD	Grolier's Encyclopedia 96 (21 vols, 9 million words!)	£45.83 (£39 inc VAT ex VAT)

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DIRECTOR MULTIMEDIA STUDIO

LLVCD	Le Louvre (tour the famous Paris Gallery)	£41.03 (£35 inc VAT ex VAT)
MICD	Musical Instruments (Microsoft's excellent entry)	£29.38 (£25 inc VAT ex VAT)
MPCCD	Monty Python's Complete Waste of Time (not!)	£34.08 (£29 inc VAT ex VAT)
OEDCD	Oxford English Dictionary (the whole thing)	£264.38 (£225 inc VAT ex VAT)
REDCD	Red Shift (superb astronomy program)	£41.13 (£35 inc VAT ex VAT)
UHBUCD	Ultimate Human Body (Dorling Kindersley's one)	£29.38 (£25 inc VAT ex VAT)

ENTERTAINMENT

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WRGCD	Warcraft II (detailed graphics, haunting sound)	£37.61 (£32 inc VAT ex VAT)
ACSCC	Actua Soccer (set to be number one for sure)	£34.08 (£29 inc VAT ex VAT)
DOM2	Doom II (you may have heard of this game!)	£34.08 (£29 inc VAT ex VAT)
MYST	MYST (magical mystery adventure)	£37.61 (£32 inc VAT ex VAT)
SIMCC	Sim City 2000 Collection (with extra goodies)	£41.13 (£35 inc VAT ex VAT)
PRPCD	Prince of Persia I & II (two of the best ever)	£22.33 (£19 inc VAT ex VAT)
BRTM	Buried in Time (sequel to Journeyman Project)	£34.08 (£29 inc VAT ex VAT)
IFDCD	In the First Degree (play a murder prosecutor)	£37.61 (£32 inc VAT ex VAT)

BEST SELLING GAMES ON FLOPPY DISK		
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A10A	A10 Attack (the best flight sim around)	£45.83 (£39 inc VAT ex VAT)
F18H	F/A18 Hornet (from the creators of Hellcats)	£57.58 (£49 inc VAT ex VAT)
JTG10	10 Intelligent Strategy Games (backgammon...)	£34.08 (£29 inc VAT ex VAT)
BRDG	Bridge (not the Golden Gate but the card game)	£29.38 (£25 inc VAT ex VAT)
FLSM	Microsoft Flight Simulator (realistic, accurate)	£41.13 (£35 inc VAT ex VAT)
LEMB	Lemmings/Oh No! More Lemmings Bundle	£25.85 (£22 inc VAT ex VAT)
ARCD	Arcade (collection from Microsoft)	£22.33 (£19 inc VAT ex VAT)
ISHD	Ishido (Chinese strategy game)	£19.99 (£17 inc VAT ex VAT)

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BK5010	Internet Starter Kit Mac	£27.50
BK2180	Macworld Photoshop V3.0 Bible	£38.99
BK2016	Photoshop Wow Book	£32.95
BK6035	Quark Xpress Book 4th Ed.	£29.99

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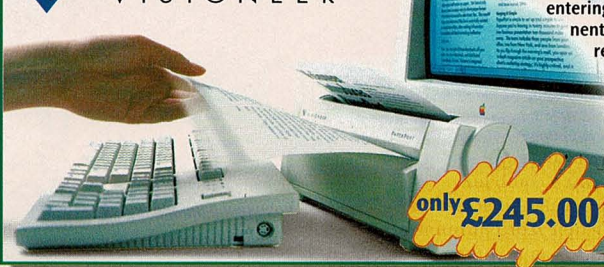
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VISIONEER



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FEVC	MV16 (16 bit colour/10BaseT Ethernet for 5300/190s)	£139.00
GPCA	PowerPort Platinum (PCMCIA 28.8 fax modem)	£239.00
TPCM	TDK Modem (PCMCIA 28.8 fax modem)	£215.00

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TMAD	Turbo Mouse (top selling trackball)	£75.00
WCLGD	Wacom ArtPad II A6 (handy stylus and tablet, inc Dabblie)	£135.00
WCLU5	Wacom UltraPad A5 (stylus and tablet)	£259.00
WCLU4	Wacom UltraPad A4 (professional stylus and tablet)	£359.00
VR256	256K VRAM Chips (adds more colours)	£19.00
VR512	512K VRAM Chips (adds more colours)	£25.00
VR9A	1Mb VRAM DIMM (for 7200, 7500, 8500)	£45.00

PROGRAMMING

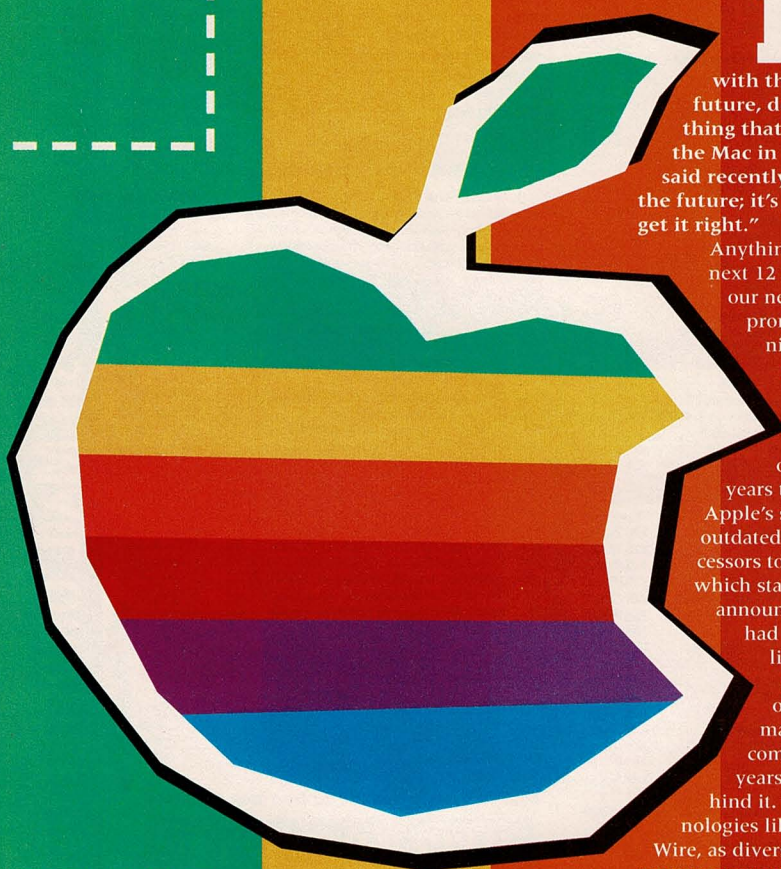
HYPC	HyperCard 2.3 (new version, more power)	£89.00
CDWG	Metrowerks Code Warrior Gold v.9 (PowerMac compiler)	£290.00
CDWJ	Discover Programming with JAVA	£65.00

MacLine
BRITAIN'S OLDEST MACINTOSH MAIL ORDER COMPANY



Mac '97

The coming year is the most important one in the Mac's history: your favourite computer will never be the same. Richard Hill explores the technologies and trends that everyone will be talking about in 1997.



Even the head of Apple's research labs, the part of the firm with the task of shaping the future, doesn't know everything that's going to happen to the Mac in 1997. Donald Norman said recently: "It's easy to predict the future; it's just that you never get it right."

Anything could happen in the next 12 months, but let's stick our necks out and make one promise: you won't recognise the Mac this time next year.

1997 will see the culmination of many developments, some of which have taken years to build to this point. Apple's switch from Motorola's outdated 68000-family of processors to the PowerPC chip, which started in 1994 but was announced as far back as 1991, had one aim behind it. The licensing programme that's enabled firms other than Apple to make Mac-compatible computers over the last two years had one intention behind it. Developing technologies like OpenDoc and FireWire, as diverse as they are, have a common purpose.

Here's what it's all about, the prize that's at stake: which computer will

everyone be using in the future?

Everyone in the industry agrees that computer usage can spread even further than it has already, affecting the lives of millions of people, and that we can all reap enormous benefits from that. Parts of our everyday lives, whether it's communicating or learning, will be transformed as computers are linked across the Internet, exchanging information across the world. And we'll use this combined global library and network in ever more creative and expansive ways. It's a wonderful plan.

One small problem: it doesn't work. Today's computers are not up to the task set for them. For every person who's able to work magic with their Mac, manipulating 3D images and cruising the Net, there are three more struggling to use a word processor, and 20 more who can't even afford the computer they need to join the revolution.

Apple believes the Mac and its technologies can make the difference, that it has the solutions to these problems: computers so easy to use you don't think of them as computers, those complex boxes on the desk in the corner. But there's a lot of work to be done first.

The PowerPC Platform is the first step. It unshackles the Mac from the technological ties that have restricted its use, putting it on the road toward becoming a system that far more people can use in many more situations. Let's see how the Mac is making its play for freedom, and how it will make further use of the Internet – the biggest computer revolution of the 1990s.

Software

Up and coming programs that you'll soon use every day

Middleware

Technologies that every program on every computer can use

Operating system

The Mac's guidance system that shows the computer how to work

The Mac

The computer you use today and the path it will take in 1997

Beyond the Mac

How familiar Mac ideas will soon show up in other types of computer

Devices

The machines that link the Mac to the bigger world outside



Software

FlashPix

What is it? A new image format to rank alongside the familiar TIFF, GIF and PICT – but this one's been designed specially for the digital imaging era.

What's going on? The FlashPix format stores image information like any other format; but FlashPix effectively keeps several versions, using the version that's most appropriate for the way the image is being used. So you'll get a small, low-resolution image for downloading across the Web, a medium-res image for working with on your Mac and a high-res version for printing.

Why does it matter? FlashPix could mean an end (or the diminishment, at least) of the format wars – you'll no longer have to use different image file formats for different tasks.

Look out for... Software that recognises the FlashPix format, along with hardware optimised for the new format.



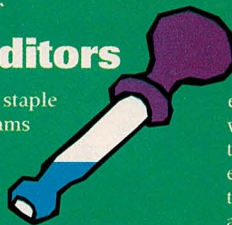
Image editors

What are they? A staple of the Mac – programs that enable you to display and manipulate pictures.

What's going on?

Image editors like *Photoshop* are essential for graphic designers, but home users have traditionally accepted weaker packages that work on their slower Macs. The PowerMac is changing that, with professional-level power and features now coming into the home.

Why does it matter? Confident home users will get the features they've

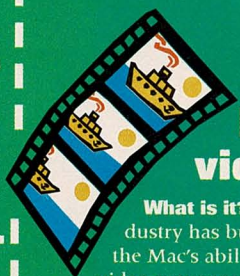


always wanted; but for everyone else, there'll be a wave of programs that are powerful enough to disguise their complexity and handle typical editing tasks automatically. Adobe's "home *Photoshop*" program *PhotoDeluxe* was just the beginning...

Look out for... *PhotoMate*, *LivePix*, *Color It 3.5* and, from MetaTools, more focused tools along the lines of *Kai's Power Goo*, using innovative design to make doing difficult tasks not only simple, but fun.



Photoshop still leads the field, but there'll be simpler and cheaper image editors that have *Photoshop's* power.



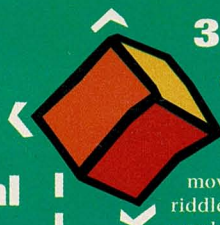
Digital video

What is it? An entire industry has built up around the Mac's ability to display video sequences, so you can edit video and copy it back to video tape.

What's going on? Digital video is the DTP of the '90s. Once confined to professionals with tens of thousands of pounds to spend, a complete digital video system (Mac included) is now available for under £2,800. Apple's Creative Studio is simply the most visual symbol of a far wider trend.

Why does it matter? Just as most people with a Mac use DTP, even if it's just for putting together a poster to promote a fête, so too they'll be working with video; editing camcorder videos, putting video diaries on the Net – video will become a more and more common part of everyday computing.

Look out for... Also following on the heels of desktop publishing, run for cover as the most horrific productions ever seen emerge, and we all learn a new visual grammar.



3D

What is it? The illusion of depth in any image or animation on your screen – moving through alien-riddled mazes in *Marathon* or a scale model of a building that's never been built.

What's going on? 3D graphics is taking over. You'll see it everywhere, as the people who create software make use of its ability to involve you and make your Mac into a more familiar setting. *HotSauce*, for example, works with *Netscape* to present a 3D view of the Internet that shows you what it's like to cruise through pages in search of the site you want.

Why does it matter? 3D makes the Mac more real – the world is in 3D, after all. For many, wandering through imaginary worlds of light and shade in search of information or entertainment will prove a more intuitive method than learning how to cope with menus and tool palettes.

Look out for... Virtually every game will have a 3D element, while 3D graphics programs will become cheaper and more powerful – we can only hope they're easier to learn as well.



You're going to see a lot more good-quality 3D, like the forthcoming release of *StudioPro 2.0*.

Office software

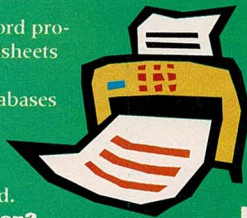
What is it? Word processors, spreadsheets for number-crunching, databases – the basic productivity programs you take for granted.

What's going on?

New versions of *Microsoft Office* and *ClarisWorks* – programs crucial to the Mac's success – are due for next year. And at last there'll be more alternatives to this pair's domination of the productivity market: *WordPerfect* is set for a serious revamp under new owner Corel, while *Wingz* and *Storeys* offer new spreadsheet ideas. *OpenDoc* (see overleaf) will also offer you brand-new ways of working.

Why does it matter? Good business and productivity programs will be essential, as the PowerPC Platform brings the Mac OS back in front of business users' eyes.

Look out for... The main activity takes place in the summer – keep an eye out for plenty of releases.



Internet '97

Expect every program either to use the Internet more than before – particularly *ClarisWorks* and *Office 97* – or to make it easier for you to create Web material, like 3D or video.





Middleware



Data management

What is it? A boring term for a potentially extremely exciting new way of working with the information you use every day.

What's going on? Data management will enable you to search through huge amounts of text files quickly for a particular word or phrase. You'll search for information across your own hard drive, a company network and the Internet without caring which is which, and save data in the most appropriate place quickly and easily. All this will be possible thanks to a set of software systems Apple is working on and gradually releasing.

Why does it matter? Whether it's a word processor file, a Web page or a database document, working with large amounts of text needn't be such hard work any more.

Look out for... Apple technologies including V-Twin, the Meta Content Format and Apple Data Detectives.



QuickTime Interactive

What is it? The next generation of Apple's QuickTime video display system, which has recently become far more of a media player, able to handle sound and animation as well.

What's going on? Due out in the summer, QTI turns QuickTime into a full multimedia system. You'll be able to interact with objects in a QuickTime window, just as you do with multimedia CD-ROMs – and so will every computer that can use QuickTime (a few hundred million at the last count). Read about it in News this issue, starting on page 16.

Why does it matter? QTI opens up the possibilities of self-contained characters or objects, made by different people, being able to work together on your Mac Desktop. It also makes creating your own multimedia both a lot easier and much cheaper.

Look out for... HyperCard 3.0 and other programs will enable you to create your own interactive objects. QTI also contains features that make it easier for Mac multimedia to be used on smaller devices – even palm-sized machines.



Java

What is it?

Complicated as hell. Java is a system that supports small, intelligent software components (applets) that

can work with each other or with parts of your Mac, predominantly through the Internet.

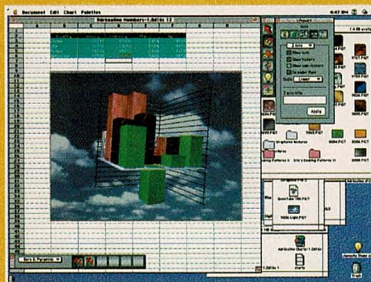
What's going on? Java remains the province of software developers, with genuine uses still to appear. But this Internet-based component system has a great future.

Why does it matter? Java represents a new attitude. The applets automate many processes – if you don't want to have to think about how a computer works, it'll make your wish come true.

Look out for... Java Virtual Machines are the medium through which these tiny applets work. They're already inside Web browsers – often you've no idea you're using Java when you're on the Web – and soon one will be part of the Mac OS. Some people suggest Java may form the backbone of Mac OS 8...

OpenDoc

What is it? Apple's component software system enables you to bring different types of program together in one document – for example spreadsheets and databases.



Charts and Numbers is one of OpenDoc's many innovative Live Objects headed your way.

What's going on?

After a lengthy period of development, the first OpenDoc components are emerging. The first "Live Objects", as the components are known, are chiefly

from smaller companies, many of whom are banding together to make their voices heard.

Why does it matter? OpenDoc is more than just an alternative way of doing things you can already do: Live Objects can combine with each other to become more than the sum of their parts. Business in particular has great potential for a sea change in working practices.

Look out for... The first Live Objects will appear between now and spring, while programs like *ClarisWorks*, *Nisus Writer* and *WordPerfect*, as well as your Mac Desktop, will be modified to work with the newcomers.



QuickTime Media Layer

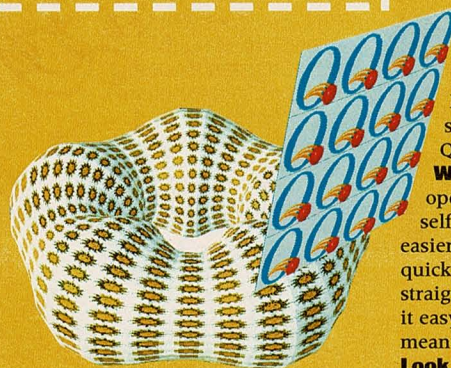
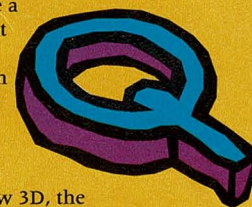
What is it? More a marketing term at the moment,

QTML is the term for all of Apple's media technologies, including QuickTime video, QuickDraw 3D, the QuickTime VR virtual environment system and speech recognition.

What's going on? The various systems are being developed to co-operate more closely. You can already drop a QuickDraw 3D object straight into a QuickTime video, for example, for instant animation. Nowhere will this spirit of fellowship be more evident than in QuickTime Interactive.

Why does it matter? The co-operation between these previously self-contained systems will make it easier for you to be creative and also quickens the growth of simple, straightforward computing by making it easy for professionals to create meaningful interactive worlds.

Look out for... Progress a step at a time in 1997. Updates of QuickTime and QuickTime VR are scheduled, while QuickDraw 3D 1.5 is just out.



You can already drop QuickTime video onto QuickDraw 3D objects, but QTML will mean even closer integration.



Internet '97

Technologies like OpenDoc and Java will make the Internet invisible – just plug in your modem and you won't even realise you're on the Net. You certainly won't need to open a Web browser.



Operating system

Harmony



What is it? The next version of the Mac OS, now known as Mac OS 7.6.

What's going on?

Mac OS 7.6 sets the Mac operating system firmly along the road of exploiting the speed of the PowerPC processor used in PowerMacs. Technologies like OpenDoc and the Internet utility *Cyberdog* will be integrated into the OS far more closely than before.

Why does it matter? Mac OS 7.6 should be the release that sorts out the most persistent reliability problems some Mac owners have suffered from with recent System versions. It's also the first acid test of Apple research chief Ellen Hancock's clear intent to have Apple software work well and appear on time.

Look out for... Mac OS 7.6 is due for release in January, although the official UK version won't appear for a while after that, of course.

BeOS



What is it? Designed by Be, the BeOS is an alternative operating system to the Mac or Windows, written specially for modern high-speed processors.

What's going on? The BeOS will run programs written specially for it, offering facilities like running several programs concurrently and protecting other programs if one should crash. It should also be stable enough that crashes of this sort are rare.

Why does it matter? The BeOS is the state of the art, offering speed that

makes other OS designers look on in envy. And if industry speculation is correct, it could form the foundation of a future Mac system.

Look out for... The first version of the BeOS is due to appear on the PowerMac early next year. It's still going to be some time before you see programs that can actually run on it, though – whether or not Apple forms some sort of partnership with Be. There's still a lot of work to be done before the BeOS is complete.



The BeOS is drawing a lot of attention, but there's still much to be done before it's ready for everyday use.

Mac OS for PowerPC



What is it? The first version of the Mac OS able to run on the PowerPC Platform computers due out next year.

What's going on?

It works just like a Mac does, but on a brand-new computer design that's also able to run other operating systems like Windows NT and Unix. It's likely that this version of the Mac OS will lag behind the system installed on the more familiar Mac-only computers. (As you can see, this means life is about to get confusing for a while.)

Why does it matter? The PowerPC Platform will open up the Mac OS to a whole new audience, particularly in business.

Look out for... The debut of the first PPCP computers in Spring – with the Mac OS included as part of the package.

Mac OS 8



What is it? Assuming the status of the Holy Grail among the Mac community, Mac OS 8 is the much-delayed bottom-up rewrite of the Mac operating system.

What's going on? Mac OS 8 represents the Mac of the future – fast, flexible and reliable. What isn't clear at the moment is when it will appear, or even how it will be constructed.

Why does it matter? Mac OS 8 should have been the release that set the Mac clearly ahead of its rivals once again; and we'll learn soon if that original intention can still be met.

Look out for... Under Ellen Hancock, Apple is currently reviewing its options and coming up with a fresh plan – a further test of whether the new management's good intentions can produce results. Possibilities include using elements of the BeOS or integrating the Mac OS more closely with Java. Hancock promises an announcement within weeks.

Tempo



What is it? Yet another version of the Mac OS, this time the follow-up to Mac OS 7.6.

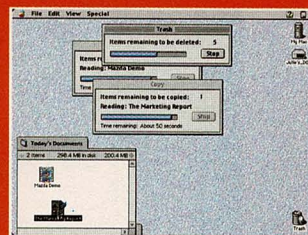
What's going on?

Tempo will at last bring you many of the features once earmarked for Mac OS 8. Look out for a Finder that can perform several tasks simultaneously, for example. Tempo will be written for 68K Macs as well as PowerMacs.

Why does it matter?

Tempo is the most advanced operating system you'll have seen on the Mac, and the strongest indicator yet of where the Mac is headed.

Look out for... Apple promises Tempo will appear in July, with UK and other international versions to follow.



Tempo will include features like the ability to produce more than one copy at once.

Internet '97



As the Mac OS and Java merge, the divisions between the two will become invisible and using the Internet will become a daily part of using the Mac.



The Mac

Speed



What is it? Faster Macs. The trend that saw the speed of the fastest-available home Mac leap from 100MHz to 240MHz in the past year is set to continue.

What's going on? The race is on now to reach 300MHz on the top-level 604e, and Mac manufacturers are already looking for ways to go beyond that speed. Exponential chips and multiple processors are two of the options.

Why does it matter? It's not just a macho thing, a case of "My Mac's faster than yours." It's this fundamental increase in Mac horsepower that enables all the other developments to happen. Simpler and more intelligent software, widespread 3D and video – none of it would be possible without these powerhouses.

Look out for... Faster Macs.

MP

What is it?

MP stands for multiple processor – more than one processor, working in parallel on your motherboard.

What's going on? First seen in DayStar's top-of-the-range Genesis Mac-compatibles, the MP system is set to become more common and accessible. No Mac OS or PowerPC Platform line of machines will be complete without one MP system, and dual-processor offerings will be more affordable than



the four-chip set-ups that dominate at the moment. MP is a hit with graphics software firms, who are busy converting their titles to work on MP, but there's little sign of publishers with other specialisations joining in.

Why does it matter? Two chips don't mean twice the speed, but MP systems still offer significant boosts for Mac owners in a hurry.

Look out for... Umax is just launching its first dual-processor system, and Apple will have further follow-ups to its own 9500 MP. Meanwhile DayStar's prices are coming into line with those of its rivals.

Portable Macs



What are they?

Apple's PowerBooks are lightweight machines you can fit in a carrier bag and use on the road.

What's going on? It's been a troubled couple of years for the PowerBook, with faulty machines followed by shortages after *Independence Day* and *Mission Impossible* appearances. 1997 needs to be the year the PowerBook gets sorted out properly, and new machines in the pipeline look like they'll do the job. Meanwhile, the tumbling prices of flat screens mean that PowerMacs will become more affordable overall.

Why do they matter? There's huge demand for portable computers, especially within business, and the Mac OS goes down well with busy managers trying to produce a report in a hurry. Portables are a vital part of the Mac's future success.

Look out for... There'll be a high-tech new PowerBook from Apple early in the year, with more to follow later, no doubt. As for portable machines from other companies: Apple may not have licensed its own PowerBook designs to the likes of Power Computing and Motorola, but who's to say these companies can't design their own? Look out for PowerPC Platform portables as well.

Solutions



What are they? Epitomised by the Apple Performa line, solutions are simply Macs tailor-made for different users; the type of processor, the extra hardware, the software, the design of the case – all made for you.

What's going on?

Apple's taking the lead, but other firms will follow as the PowerPC Platform increases their options and yours. Motorola's entire StarMax line is purpose-built for business, for example.

Why does it matter?

Solutions are what will make one specific Mac-compatible stand out when you've got 20 or 30 similar-spec models to choose from.

Look out for... Companies like Umax and Power Computing will make it easier to tell their machines apart. Mail order companies will sell own-brand computers made to your specifications.



Apple's Creative Studio is a fine example of a Mac aimed at a buyer with a specific interest and budget.



Internet '97

You'll need that faster Mac as Web design grows in sophistication – and pages get bigger – while the planned changes to improve the speed at which pages download take their time to arrive.

Exponential X704



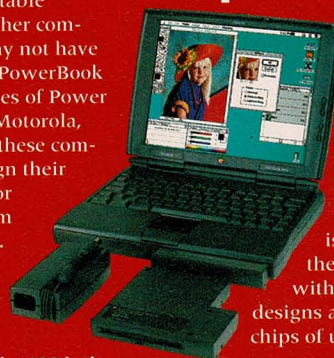
What is it?

The personal computer chip that could make everything else out there look exceedingly slow indeed.

What's going on? Exponential's X704 is essentially a PowerPC processor like the ones produced by IBM and Motorola for today's PowerMacs; but new engineering techniques enable the chip to run at faster speeds without the normal problems of overheating and burning out. While the current PowerPC champion is a 604e running at 225MHz (the 603e clocks in at 240MHz but isn't designed to run as quickly in the first place), the fastest X704 on the drawing board is an astonishing 533MHz.

Why does it matter? It'll cost you, but Exponential's wonder chip could outstrip all the competition and place the PowerPC Platform in a even stronger position against the traditional PC as far as businesses are concerned.

Look out for... Exponential reckons the first computers to use its chips could appear in the summer, from companies including Apple and Umax. But one problem Apple still needs to sort out is whether it can get the rest of the Mac hardware to keep up with the processor. Current designs are equipped only to handle chips of up to 250MHz.



Apple's PowerBook 1400 is the first salvo in what's going to be a busy year for portable Macs.



Beyond the Mac

Handheld devices



What are they? They may not be Macs, but handily-sized computers like the MessagePad and the eMate will hook up to your machine.

What's going on? After years of the Newton OS being dismissed, the Internet is leading to a resurgence in the idea of the device you can fit in a jacket pocket. Many computer firms are looking at basic computers you can carry around and plug into a larger system wherever you are.

Why does it matter? Go to the other side of the world, then use a phone line to connect your device to your Mac at home to download the up-to-date information you need.

Look out for... Apple's eMate will test the idea of taking a small device away from the workplace to carry on at home – but the workplace will be a school. Meanwhile new, faster processors will unleash the potential of Newton.

PowerPC Platform



What is it? The story of '97: a computer built to run whatever operating system you want from whomever you want.

What's going on? You wander into a shop and the assistant tries to sell you a PC – we all know that one, right? So let him: these PCs will run the Mac OS, Windows NT, Unix, BeOS...

Why does it matter? Computer manufacturers will be able to make and sell low-cost systems without having to take sides between Microsoft and Apple. The customer gets the software he wants. Maybe he's bought the system for his existing Windows NT software – now he'll be able to try the Mac OS. In the OS war, the PowerPC Platform is the Mac's Trojan Horse.

Look out for... Spring systems from Apple, Motorola, Power Computing, Umax and many others – including some major manufacturers from the Windows PC camp.

Pippin

What is it? A Mac-based console you can plug into your TV.

What's going on?

Whatever you like. Do simple word processing, enjoy multimedia and connect to the Internet for around half the price of a Mac.

Why does it matter? The companies planning to sell the Pippin, Bandai and Katz Media, are aiming at the potentially huge home market with a low-cost all-purpose machine; but they're also eyeing up more specialist, yet equally lucrative, areas. Banks are looking for devices with which they can

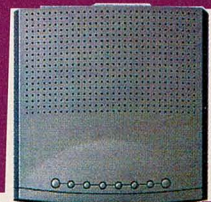


offer a home banking service, for example, while cable TV companies would love a versatile box that relays pictures and connects to the Net. Modified versions of Pippin could fit the bill nicely.

Look out for... Pippin machines from Katz Media on sale in the UK.

Bandai is offering no indication that it has plans for Europe. Meanwhile

Apple is absorbing lessons from watching these first implementations of the Pippin concept, and is preparing a second model.



It may yet take a while for the Pippin concept to catch on, but Apple's confident it will be a success.

Mutant Macs



What are they?

Macs with extra bits – accelerator or 3D cards sold as part of the Mac when you buy a new machine.

What's going on? You think Apple's plan to reduce the basic number of computer motherboard designs will mean Macs you can't tell apart? In fact they'll just make it easier for computer makers to set themselves apart. Umax, for example, is already selling a Pulsar with a graphic accelerator card. Philips' TriMedia card will offer a high-power boost to Macs next summer. It's all part of the whole industry's new solutions-based approach.

Why does it matter? Add-ons like these have been an important part of Windows PCs for years – except loose standards have meant you couldn't rely on every piece of software working with every card. Apple and the Mac are doing the job properly, giving you the freedom to customise your system with confidence.

Look out for... More Macs will be sold with cards already fitted – and later, as part of the PowerPC Platform, graphic accelerators will be an integral part of many systems without the compatibility conflicts suffered by some PCs.

Mac explosion

What is it? Software licensing enables many companies to include the Mac OS as part of their computers.

What's going on? It's great to be able to choose between the five companies currently offering Mac systems in the UK, but take a deep breath – they're going to have company next year. Over 20 companies are already making Mac OS systems somewhere in the world, or have public plans to do so, and many others are simply waiting for enough stock of components to make PowerPC Platform computers.

Why does it matter? It means more choice for you. Some firms will compete with Apple to offer well-designed systems at higher prices, while others will offer cheap and cheerful budget systems that lack aesthetic appeal but do the job. Others still will make up systems to your requirements, while specialists will offer premium machines for free-spending professionals.

Look out for... More Mac firms doesn't necessarily mean more Mac sales for the time being – that's the story of '98...



Internet '97

Whether they're PowerMacs, PowerPCs or Pippins, every new computer on sale will inevitably include the software that you need to link yourself to the Internet.





Devices



Digital input

What is it? The bridge between the real world and the virtual one – scanners and digital cameras that convert images from life into digital information your Mac can display and alter.

What's going on? Devices for computers tend to come into vogue as their price hits the right point and people realise their usefulness. A while back everyone wanted a CD-ROM drive; then it was a colour printer.

Scanners and, if you've got a bit more money to spend, digital cameras are the next must-have for any self-respecting Mac set-up.

Why does it matter? Scanners complement your new colour printer, turning your Mac into a full desktop graphics studio you can use to process colour pictures and designs.

Look out for... Cheaper good-quality scanners and digital cameras that can capture with enough detail to be any use to most people.



Polaroid's digital camera is one of a fast-growing breed of digital input devices which turn your Mac into a graphics studio.



Storage media

What are they? Hard drives and removable disks of all descriptions are essential to store information of all sorts.

What's going on? Iomega and SyQuest have led the way

with new formats for computer owners' new needs, and there's more to come. Iomega's n-hand format is a small disk, able to store 10Mb at once, and may prove invaluable for all those digital cameras and handheld devices everyone's supposed to be buying. And the firm's Zip disk may yet pull the feat of becoming the new floppy – the portable format everyone owns.

Why does it matter? If you're using your Mac to manipulate images or produce your own video, you're going to need a storage device to keep all your work on – and it had better be fast and inexpensive.

Look out for... Storage prices will fall and more competing formats will appear, making it even more difficult to decide which ones will still be around in two or three years.

1394

What is it? Better

known as FireWire, 1394 is a design for a new cable, able to transfer data much faster than the SCSI wires you use at the moment.

What's going on? There are already 1394-equipped devices on sale – expensive and non-standard camcorders from Sony. 1997 will see 1394 come to the Mac, with PCI cards giving your machine that vital high-speed connector. It's not likely to be built into Macs until 1998, though.

Why does it matter? You'll be able to transfer all those images and video clips you're using much faster with 1394 scanners, cameras; and print them faster with 1394 printers. Eventually printers should cost much less, too; they won't need memory to store the print-out information that's plodding through slow connections. And you won't have to work out which cable fits where – they'll all be the same.

Look out for... Still early days for the new standard, so there won't be much to buy, but the electronics industry wants it to succeed.



Faster CD-ROMs

What are they? CD-ROM drives like the one your Mac has, but faster.

What's going on? So you think these new eight-speed CD-ROM drives are impressive? Well, they're nothing compared to what's coming. Look out for 12-speed drives during the spring; then expect 12-speed to become obsolete as 20-speeds become the standard later in the year.

Why does it matter? Actually, a lot of people aren't convinced faster CD-ROM drives *do* matter: most leisure titles are still designed for double-speed drives, simply because publishers don't want to lose that large potential audience that own older drives. But hey! Your MAC-FORMAT Cover CD will open ten times faster with a 20-speed.

Look out for... It's going to be a long time before CD titles catch up with the devices they run on. It'll just make DVD look that much more impressive.



Iomega is leading the storage media revolution with versatile new formats like Jaz (above), Zip and n-hand.

DVD

What is it? Digital Video Disc is the ultimate storage medium, able to store the equivalent of

20 CD-ROMs, entire Hollywood movies or hundreds of music albums.

What's going on? After lots of arguments and setbacks, it finally looks like one DVD design will go on sale next year. Players will add \$500 to the price of a computer, but there's enough momentum to ensure that the price comes down very quickly.

Why does it matter? Everyone wants more convenient storage space than CDs can offer any more, but you'll still be able to use your collection on the new players. DVD is arriving at the right time to serve the demand for digital media faster computers are breeding.

Look out for... It may still be 1998 before you can buy a Mac with built-in DVD, but professionals will snap up external players. You'll be able to buy entire photo reference libraries on one disc, like you can get fonts today.



Internet '97

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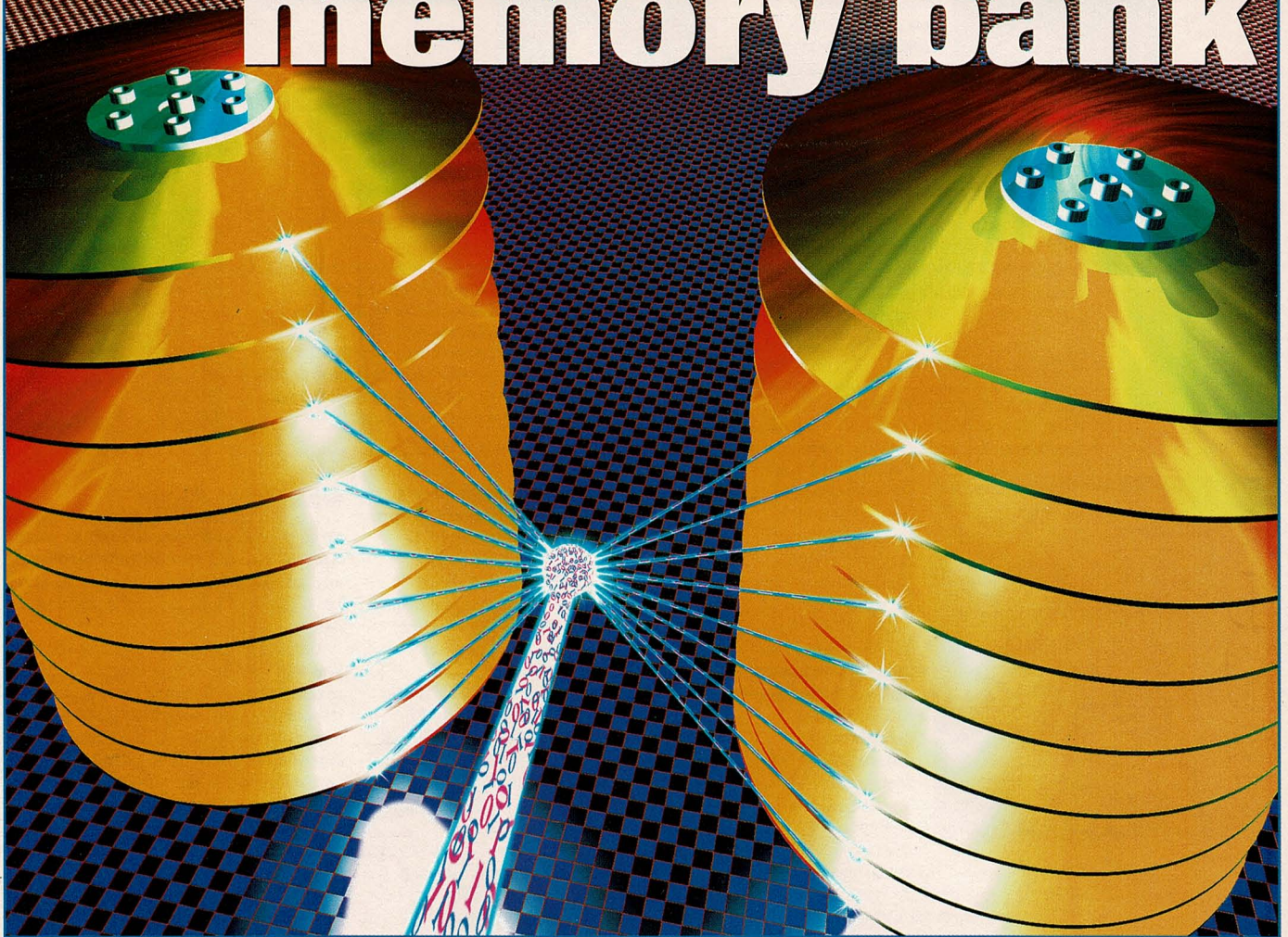
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RAID the memory bank



Hard disk arrays ("RAIDs") offer high-speed disk performance and potential data protection. What's more, you can now set one up at minimal cost. Derek Smith explains what it's all about.

Hard disks have been falling in price and growing in capacity for some years, but what if you're involved in, say, video editing and need even more space than any single disk can offer? Simple: you can interlink two or more hard disks in an array. The good news is that the benefits are now available to almost anyone with a Mac.

In the past, an array was fairly costly, requiring at least two (expensive) hard disks, controlling software, plus extra SCSI connection cards. Now the software is very affordable (or even free, in certain circumstances), storage costs less per megabyte than ever, and extra hardware is totally optional.

However, creating a bigger hard disk

isn't really why arrays were developed in the first place. The aim was data protection. As computers became an integral part of everyday life, businesses relied totally upon the data stored on their hard disks, so the safety of that data became paramount. The most basic precaution became the regular backing-up of hard disks, so that if they failed, the data could be restored, with only the information entered since the last backup being lost.

But imagine a bank or hospital losing even one hour's data – the results could be disastrous. A "live" backup system was needed, so that if a hard disk were to fail, no data at all would be lost. That's why RAID was invented.

RAID stands for Redundant Array of Independent Devices (or Inexpensive

Drives, or some combination of the above!). There are five original levels of RAID. The simplest, RAID 1, involves saving all data simultaneously to two identical hard disks. If either disk fails, the system will ignore it and happily carry on using the second disk (each is "redundant", see?). The system would warn of the disk failure, so the computer could be shut down and the faulty disk could be replaced as soon as possible.

This might be tolerable for an organisation like a bank, which can change disks at night, but not for a hospital, where data is required at a moment's notice, 24 hours a day. So, for computers that cannot be turned off for even a minute, the more advanced RAID levels, such as level 5, were developed. These



How to... create a disk array

You can create RAID arrays from any two drives (or more if you need them), including drives such as Electronique d2's external 2Gb hard drive, reviewed in **MACFORMAT 43**.



enable the disk swapping to be done without switching the computer off, something known as "hot swapping".

More recently, RAID 0 was developed.

Here, data is "striped" – both written and read simultaneously across two or more hard disks. For instance, if you saved a 10Mb file, 5Mb would be saved to one hard disk while the other 5Mb is being saved to another disk. This could theoretically double the speed of your disk access. However, with a moment's thought you'll realise that with RAID 0 there is no redundancy or data protection whatever. So in fact it's not truly RAID at all. Maybe they just ran out of catchy acronyms!

Which RAID?

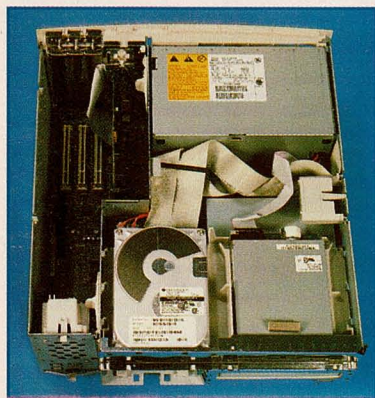
Okay, so you know you want RAID. What do you need to do now? First off, decide which RAID level you want.

Levels 0 and 1 are the main ones for Macs that aren't used as high-end servers, so we'll concentrate mainly on those.

With RAID 0, data is written and read to both hard disks at the same time, speeding up disk access by around 20-30% in real world tests. There is no loss of disk space, so if you use two 500Mb

disk, they appear on your Desktop as a single, fast one gigabyte hard disk.

This speed increase may not seem too impressive, but if you already own two hard disks and use them independently, your only extra cost is the RAID software. And if, for example, a colleague already has a RAID package, he or she could quite legally format your disks for you with their copy of the software.



The PowerMac 7500 has two SCSI buses – one Fast internal and one external. This is an ideal set-up for RAID, with one drive on each bus.

RAID level 0



100100011101001100

100100011101001100

Also known as data striping, this level of RAID combines two or more drives into a single, super-fast, bigger drive. For each drive in the sequence, data is written in segments. The data is split across the two drives, making it both affordable and fast. RAID 0 is designed solely for speed – disk access can be sped up by as much as 20-30% in real world tests – but it offers no duplication or redundancy of data.



Bingo, extra speed for no extra money.

If data safety is more important to you than speed, then you'll want RAID 1, also known as "mirroring". Here, the same data is duplicated to both hard disks, so if you want 1Gb of usable disk space, you'll need two 1Gb disks. However, these two disks still appear on your Desktop as a single 1Gb disk.

With 50% redundancy, RAID 1 is less cost-effective, but it does mean that if either disk fails, you won't lose any data. This is appropriate where losing data would be disastrous – for instance, if your Mac happens to be an integral part of your business.

Of course, this still doesn't remove the need for regular backups. For instance, if you delete a file, it will disappear from both disks, so you will still need to be able to restore that file from a backup. And, if someone steals your whole Mac setup, RAID 1 isn't going to be much help – so keep those additional backups in a separate location, preferably in a different building (in case of theft, fire, flood or acts of God!)

What hard disks?

Next, you'll need some hard disks. With RAID 0, you can theoretically connect any number of disks together in an array. So, if you had four disks, a quarter of the data would be saved to each disk.

Unfortunately, if any one disk dies, you will lose the whole RAID – thus making regular backups even more important than usual. The speed benefits of adding more disks also suffer from the law of diminishing returns, so a simple two-disk array is probably the ideal.

The hard disks do not need to be the same size to create a RAID array, so you could use a 500Mb and a 1,000Mb hard disk. You would then end up with a 1,500Mb RAID disk – although only the first 1,000Mb of data would benefit from a speed increase.

Unlike RAID 0, RAID 1 requires you to have just two disks of the same size working together. While they can be of any make, it's usually better to have identical disks. This is because they will spin at exactly the same speed, making it

Speed or security? RAID levels explained

Level 0. In this set-up, also known as "striping", data is read and split across two or more hard disks simultaneously. Unlike other levels, it is designed purely for speed, so there is no redundancy or data protection. If you use two 500Mb disks, you'll have 1Gb of useable disk space. This is suitable for any system where speed is more important than data security.

Level 1. At this level, also known as "mirroring", data is written to a pair of hard disks, so that the data on the disks is identical. The advantage is that you have a live backup system and it's no slower than a standard hard drive. The disadvantage is that you have

50% redundancy – if you use two 500Mb disks, you'll only have 500Mb of usable disk space. Suitable for systems where you need data security without a speed penalty.

Level 2. Suitable only for high-level computer systems, this is not available on the Mac.

Level 3. Data is read and written to two or more hard disks, as in RAID 0. However, another hard disk is used to store "parity" data that the system can use to rebuild stored data should one of the main disks fail. This results in less redundant disk space, wasting around 30%. However, it requires extra hardware, so

is not a viable option for most Macs.

Level 4. Very similar to level 3, but the data is handled in slightly larger blocks. This speeds up disk access and enables the process to be handled in software alone. Useful for servers and "hot swapping" – disk swapping without switching off the computer.

Level 5. Here, the data is shared across all the drives, as is the parity information. This gives good disk access speeds and minimises redundancy by eliminating a separate drive for parity information. Also suitable for servers and for "hot swapping".



Fast, wide and loose

SCSI (Small Computer Systems Interface) is the "data bus" or data transfer system used to attach most of the bits of your Mac together. It enables you to "daisychain" up to eight devices, with ID numbers 0-7. All Macs have at least two SCSI devices, the Mac itself (always set at SCSI ID 7) and the internal hard disk (usually set at SCSI ID 0). If you have a built-in CD-ROM drive, this will usually have a SCSI ID of 3.

At the back of your Mac is a SCSI port enabling you to attach up to six other devices (five if you have an internal CD drive) such as scanners, SyQuest drives, and external hard disks, as well as newer storage technologies like Iomega's Zip drives and Jaz drives.

Until recently, all Macs had just this single standard SCSI bus. The first Mac to ring the changes was the PowerMac 8100, which had two separate SCSI buses. The standard SCSI bus, with a port at the back of the Mac, had no devices attached to it – which left you free to attach the full eight external devices.

The reason there was nothing attached to it was that the Mac and hard drive were connected via a second, separate SCSI bus. This second bus was Fast SCSI, also known as SCSI-2. As the name suggests, this is a new and faster SCSI standard. Other Macs that have also featured this separate internal Fast SCSI bus are the 7500, 7600, 8500 and 9500 (but not the 7200 and 8200).

To take advantage of Fast SCSI, hard drives themselves have to be Fast SCSI devices. The good news is that this has been the standard for all hard disks for around two years, so if you have a modern hard drive, it will probably be Fast SCSI. The bad news is that there's no way to tell if your drive is Fast SCSI or not, since the cases are not marked in any way – you can only find out through trial and error.

There is an even faster standard known as Fast and Wide SCSI. No Mac yet has a Fast and Wide SCSI bus built-in, so in order to get it, you have to buy an expensive add-on card. Fast and Wide disks are also relatively expensive, meaning that you're likely to find the cost outweighs the speed benefits.

easier to write the same data to both disks at the same time.

Note that some manufacturers don't advise keeping your System software on the RAID array, suggesting you use yet another stand-alone disk for that instead. All our tests were conducted with the System Folder on the array and we did not encounter any problems. However, if you are very safety conscious, you can always buy a really cheap small hard disk, just to keep the System on.

What Mac?

Any Mac from the LC onwards can support an array. The only important thing to consider is whether your Mac has a separate Fast SCSI bus (see the "Fast, wide and loose" box above).

If your Mac doesn't have a Fast SCSI bus, then your only worry is whether to buy an internal or external hard disk. Macs with small cases, such as the LC, don't have an internal disk bay, so that solves your dilemma. If your Mac does

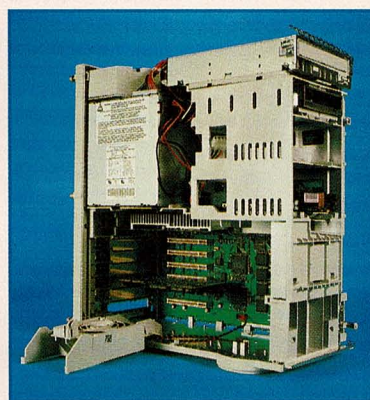
have an available drive bay, you'll have to weigh up the pros and cons.

External disks are simple enough to plug in – even with no previous experience – but cost around £60 more and require that you find yet another power socket. Internal hard disks take their power from your Mac, are hidden from view and are cheaper. The only snag is that although they are relatively easy to install, if you're not confident you'll need to get an Apple Authorised Engineer to do it for you.

If your Mac has a separate Fast SCSI connection, then there are extra factors to consider. Arrays work at their best when the two disks are on different SCSI buses. This is because you get the combined speed of both buses. So the best solution would appear to be that you'll want your internal drive on the Fast SCSI bus and a second external drive on the standard SCSI bus.

But in reality this might not be the case. Both RAID 0 and 1 require data to be written to both hard disks at the same

speed, meaning that the process can in principle only work at the speed of the slower bus. Our tests showed that sometimes arrays worked quicker when both hard disks were on the internal Fast bus. If you own a Mac with Fast SCSI, then you'll just have to try it both ways and test which is faster.



The inside of the roomy 9500 can accommodate an extra drive over the 7500. In addition, its six PCI slots mean that you could fit a Fast and Wide SCSI card to give you a total of three SCSI buses.

What software?

Right, so you've got a couple of hard disks, and you've decided between the speed of RAID 0 and the safety of RAID 1. Now you need to get some software to format your disks. We looked at four options: Trillium's *Remus*, MicroNet's *DiskWorks*, CharisMac's *Anubis RAID* and Apple's own *Apple Raid*.

Apple Raid comes bundled with some of the Apple Workgroup Server (or AWS) Macs, and it's the simplest of the RAID software we tested. A few clicks on the mouse formats a disk to be used in an array, and a few more clicks joins the two (or more) disks together. It's really not much more complex than that. The Installer program places an Extension in your System folder which helps to mount and control the array, although it isn't actually vital for it to work.

We can thoroughly recommend *Apple Raid* for its sheer simplicity and efficiency. The problem is how to get hold of a copy. Although it's bundled free with Apple's servers, you can't buy it separately and Apple has no plans to release it. This is a great shame – and more than a little odd, since it's such a good application. Perhaps if you know someone with an AWS, they'll format the disks for you.

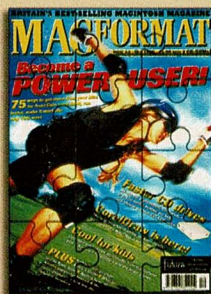
If you're after a more comprehensive package, then you need look no further than *Remus*. It has more tools, including some for reclaiming your data from damaged arrays, but is still almost as simple to use as the Apple software.

It comes in two flavours, a "lite"

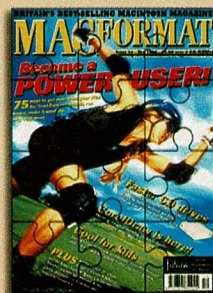
NuBus or PCI

Most Macs have internal slots that enable you to add expansion cards. Older Macs have NuBus slots, newer Macs have PCI slots. They are essentially similar, although PCI cards tend to be faster and cheaper.

RAID level 1



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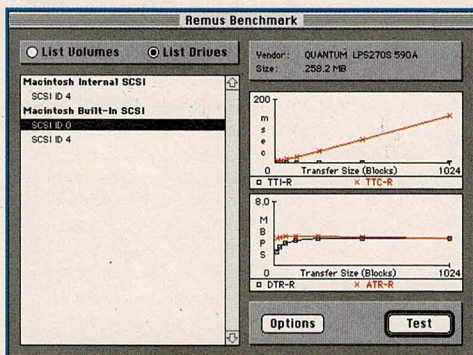
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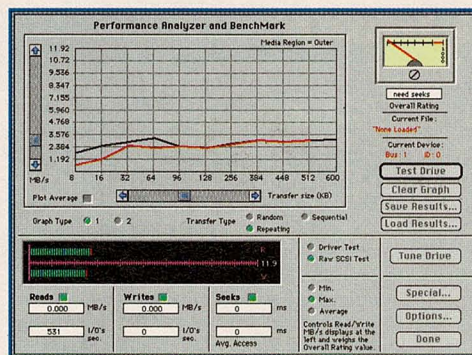
Also known as mirroring, level 1 of RAID works by copying data identically to both of the hard disks in an array. Using this system, even if one of your drives fails, all your data is protected and can be retrieved intact from the healthy drive. The obvious disadvantage of this level is that the redundancy level of the system is 50%, meaning that two 1Gb drives give you only 1Gb of usable storage. RAID level 1 is also slower than level 0.



How to... create a disk array



Remus's benchmark software is a comprehensive hard disk utility, but certainly not as pretty as...



... Micronet's DiskWorks benchmark software. It's a pity that the rest of DiskWorks is not quite as good.

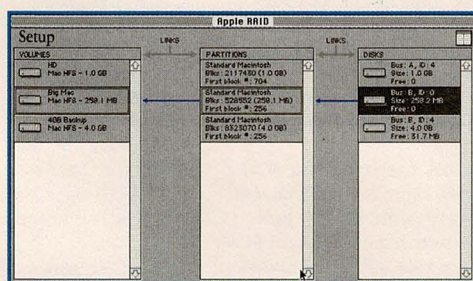
version at an RRP of £230 and a full version at £460. The Lite version contains tools for RAID levels 0 and 1, which is ideal for the majority of users. The full version also supports RAID 4 and 5, which are usually the choice for very high-end users.

MicroNet DiskWorks is a more general hard disk utility, with RAID as one of its main attractions. It boasts some pretty impressive statistics on the box, claiming up to 35% speed increase with a single disk and up to 100% with an array.

That's right, just by formatting your existing single hard disk with software, you can make it run faster than an array created with any other package. Sound too good to be true? Well, unless your hard disk was previously formatted with a very dodgy 1987 shareware utility you can expect a speed increase of about 1%. And that's if you're lucky.

So, what of its RAID capabilities? After you spend a couple of hours puzzling over three manuals specifically written to confuse and baffle, you'll give up and just load it. You'll then discover a program broadly similar to the previous two, but with some very odd habits. For instance, if you want to make an array out of two disks on the same SCSI bus, it says they should have sequential IDs. The manual admits that there's no technical reason for this, it just looks nice in their set-up screen.

After all that effort, the performance is no better than that of other software here, and occasionally we got some very poor results with certain combinations of disk. The extra tools and functions of DiskWorks are incredibly high-end and will only appeal to the most pedantic of technical users. For the rest of us, only the very reasonable price of £150 makes



Apple's own Apple RAID software is simplicity itself. You can have a RAID array up and working in minutes.

it worth considering.

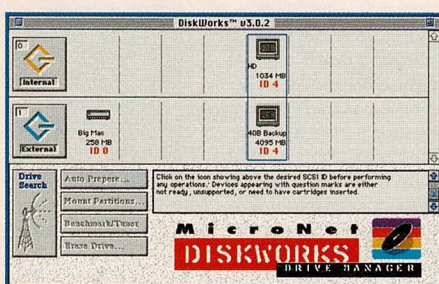
Finally we tested Anubis RAID from CharisMac. You might know the company for its CD AutoCache, which can improve the performance of CD drives. Anubis RAID is broadly similar to the rest of this bunch, and covers levels 0 and 1. Again it was simplicity to set up a RAID, and it has a much better interface than DiskWorks. Interestingly, Anubis and DiskWorks don't install any Extensions – all the necessary boot-information is within the driver software. This means you can create your array and plug it into another Mac, where it should work regardless of whether that Mac has the RAID software installed or not. Thus, you can use removable media like Jaz drives for more permanent and portable RAID.

Internet

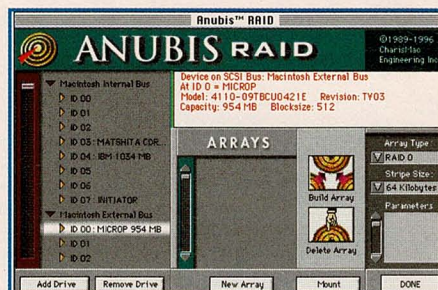
FWB's Web site is at <http://www.fwb.com/>. You'll find MicroNet at <http://www.micronet.com/>. CharisMac is at <http://www.charismac.com/>.

Arrays

For ready-made high-spec hard disk arrays, contact FWB, one of the biggest suppliers of RAID solutions. For details phone Midwich Thame on 01379 649200.



DiskWorks is also a more general utility that can also format single drives – though you won't see a speed increase of 30%, whatever it claims.



CharisMac's Anubis RAID software wins the pretty interface award, no contest, but luckily it's also very simple to use – and very effective.

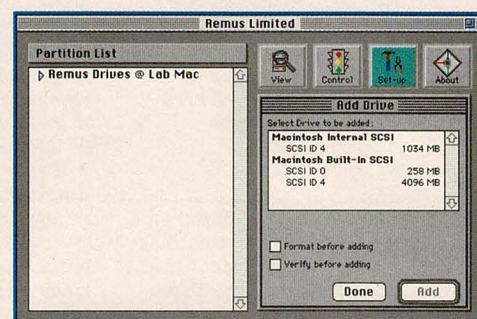
Money to burn

It's easy to get into RAID for relatively little money. However, if you're in the enviable situation of having plenty of money to spend, we'll end with a brief look at some more high-end solutions.

The first item you might want to spend your cash on is a better hard disk. While all hard disks work in the same way, better quality drives will work far more quickly than a bargain-basement unbranded disk. The difference won't be huge, but it may well be near to the 30% gain you'll get with RAID 0. It's also worth bearing in mind that, in general, the larger the capacity of the hard drive, the faster it will be.

Next on your shopping list should be a Fast and Wide SCSI card. Attach a couple of Fast and Wide disks to that, format them as a RAID 0 array, and they'll really fly. Of course, you're talking several thousands of pounds here.

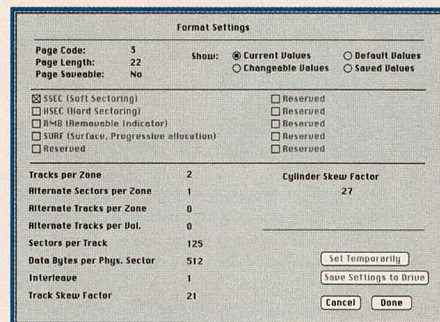
But why stop there? Why not really splash out? If you've got all this money to spend, how about buying a dedicated



The Remus formatting screen is somewhat functional, but you can at least rely on the results being good.

RAID box from FWB? These pre-assembled RAID set-ups connect to a special add-on card and deliver stunningly fast disk performance. Mind you, you're now talking £10,000+. Then again, maybe you'd be better off spending your money on some patience therapy...

- Contact MicroNet on 01926 470460.
- The Remus software is developed by a company called Trillium, whose products are handled by Adaptec, whose UK distributors are Ingram (01908 260422).
- CharisMac's Anubis RAID is available from Tyrell Corporation (0171 287 1515) or Computer Capability (01392 297620).



DiskWorks is certainly the most comprehensive package, with tons more features than you'll ever need – all at a pretty reasonable price too.

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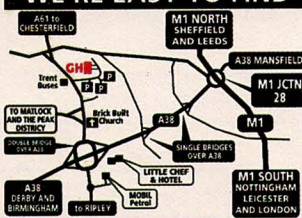


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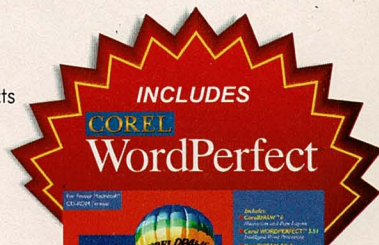
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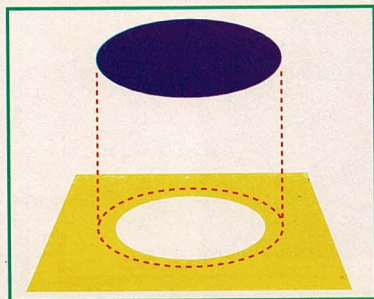
Trapped!

For perfect printed results, you need complete control over your trapping. Alistair Dabbs shows you how to make this complex-sounding process easy, using QuarkXPress 3.32.

The ability to trap colours within QuarkXPress 3.32 is one of the DTP application's strongest features, but it isn't often used, and it's rarely understood. Trapping tends to be regarded as a printing problem rather than one of design, a misconception reinforced by the attitudes of repro houses and printers.

Terms such as "trap", "choke" and "knockout" don't inspire confidence, but despite the ominous terminology, trapping is both useful and relatively easy to implement. It enables you to get exactly the colours you intended, and butt them up against each other without leaving unsightly white gaps, so it's well worth getting to grips with the tricks and techniques covered in this guide.

To understand trapping, you have to remember that colour documents are printed from several plates – one for each colour. Each plate is printed separately,



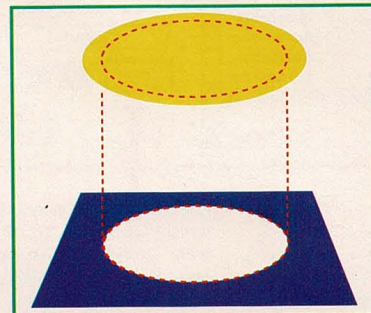
"Choke", alternatively, pulls a lighter colour in under a darker object, using a negative value in Trap Information.

producing several "layers" of colour.

Most inks have a degree of transparency, so when you print yellow text over a blue background, for example, you end up with a green headline. If you did in fact want yellow text, you need to delete or "knock out" the blue so the yellow is printed into a white hole in the background. In other words, knockout removes the background layers so that they don't interfere with the foreground. (The alternative, printing the foreground colour over the background, is referred to as overprinting. The black plate is usually allowed to overprint, because its appearance will not be altered significantly by the colour underneath.)

The problem with knocking holes in the background is that if the plates are even slightly misregistered (out of alignment), you end up with a white gap between the coloured areas. Trapping prevents this by making them overlap slightly, giving you a little leeway.

It's normal to create the overlap by printing a bit more of the lighter colour. When you're printing yellow text on a blue background, this means that the yellow letters will have to be very slightly larger than the knocked out area. This type of trapping is called "spread", because the letters expand into the background. Conversely, when you print blue text on a yellow background, the hole needs to be slightly smaller than the text. This form of trapping is called "choke", because the background squeezes in underneath the text. Either way, the principle is the same – you



An example of "spread", where the colour of a lighter object is bled over a darker surround, using a positive value in the Trap Information dialogue box.

prevent gaps by generating an overlap.

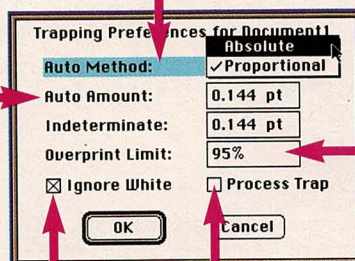
XPress is very good at trapping. It enables you to decide whether front-cover headline text should spread or evenly trap with a background picture. You can trap pictures with their frames by a precise amount, or specify which objects on your XPress page will knockout, overprint or trap, one-by-one.

The one stumbling block is that it isn't possible to preview your trap effects on-screen, due to the limitations of QuickDraw. The only way to see if your trap settings have worked is to output your page as plate separations and compare them on a lightbox. But with a little experience, and plenty of advice from your printer, you should be able to improve the apparent registration quality of your printed matter. Here, we'll cover the trapping tools and show you how to use them to deal with two common tasks: avoiding knockout under a greyscale image, and trapping text on a multi-coloured background.

Trapping controls

1 To determine how trapping is applied in your document by default, go to the **Edit** menu and select **Preferences: Trapping...** to open the **Trapping Preferences** dialogue box. These settings determine how objects are trapped when you haven't taken control of the process yourself (see step three).

Auto Amount specifies the total width of the overlap between areas of trapped colour used when no other settings are made. **Indeterminate** enables you to specify a trap measure when the background colour is indeterminate, such as a gradient fill or halftone.



When the **Ignore White** option is checked, XPress will assume that white areas are not printed and therefore won't require trapping.

Next to **Auto Method**, you can choose between **Absolute** and **Proportional**. If you choose **Absolute**, XPress takes half the **Auto Amount** (the automatic trap measure given in the choice immediately below **Auto Method**) and applies it to the darker component on each process colour plate. If you choose **Proportional** instead, XPress calculates and applies a trap value by multiplying the **Auto Amount** by the difference in darkness between an object colour and the background colour it needs to trap with. In both cases, the **Process Trap** option needs to be checked.

Overprint Limit enables you to tell XPress how proportionally dark an object colour should be before it overprints a background colour, rather than knocking it out.

The **Process Trap** is simply a fast option for applying automatic trapping values across CMYK plates, providing smoother traps. However, if you wish to customise trap values using the **Trap Information** palette (see step three), you should uncheck this option.

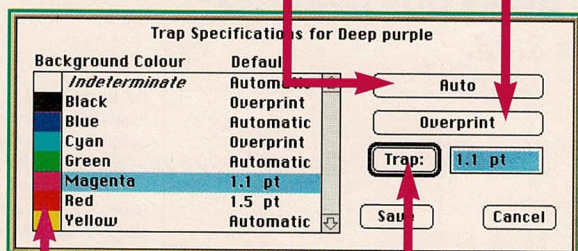


2 To specify how a particular colour should interact with other colours, go to the **Edit** menu, select **Colours...**, highlight a colour

in the list and click on **Edit Trap** to open up the **Trap Specifications** dialogue for the selected colour. Repeat for your other colours.

Clicking on **Auto** forces the highlighted background colour to use the default values you specified earlier in the **Trapping Preferences** dialogue.

Clicking on **Overprint** forces the main object colour to overprint the highlighted background colour.



The colours and their trap attributes listed on the left indicate how they will overlap when they come into contact with the main object colour you selected before clicking **Edit Trap**, not how they will act in combination with the other colours in the list.

If you haven't selected **Auto** or **Overprint**, enter any trap value from -36pt (choke) to 36pt (spread) in the edit field and then click on **Trap** to apply it to the highlighted background colour.

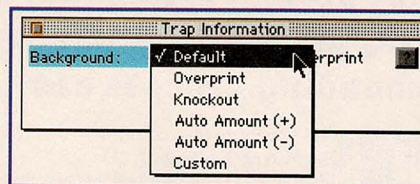
3 To apply trap settings on an item-by-item basis, for example to control the way a headline interacts with its drop shadow, go to the **View** menu, select **Show Trap Information** to open up the floating **Trap Information** palette.

Default enables you to apply the settings from the **Trap Preferences** and **Trap Specifications** dialogues; clicking and holding down on the question-mark icon gives more information on what effect the default settings will have on that object.

Overprint sets the object to overprint all other colours underneath it, overriding your other settings. It's useful for printing small text on coloured backgrounds.

Knockout sets the object to knock out the background colours cleanly without any trap overlap. You are then at the mercy of the press's ability to register the plates.

Depending upon the nature of the object selected on your *XPress* page, the palette will show you its type: **Background**, **Picture**, **Frame**, **Line** or **Text**. The pop-up menu gives up to six trap choices for the highlighted object.

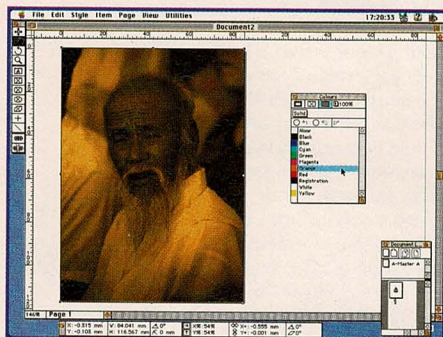


Auto Amount (+) forces the highlighted object to spread by the value given in the **Trap Preferences** dialogue box.

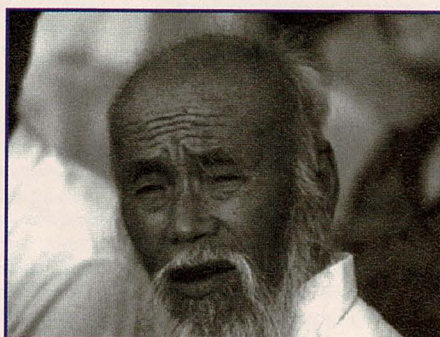
Auto Amount (-) forces the object to be choked by the background colour to the value given in the **Trap Preferences** dialogue.

Custom enables you to specify a spread (positive) or choke (negative) value for each object.

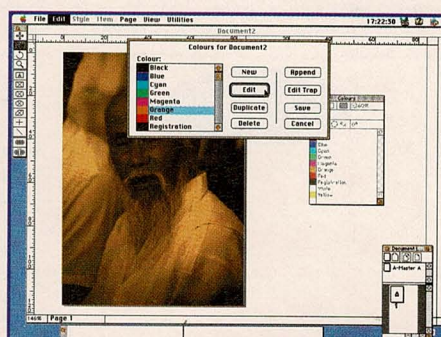
Avoiding greyscale knockout



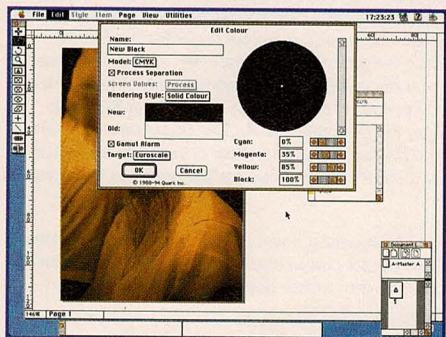
1 Draw yourself a picture box and select **Get Picture...** under the **File** menu to import a greyscale TIFF of your choice. If you give the picture box a background colour, the TIFF image will let that colour show through as an overall tint behind the image.



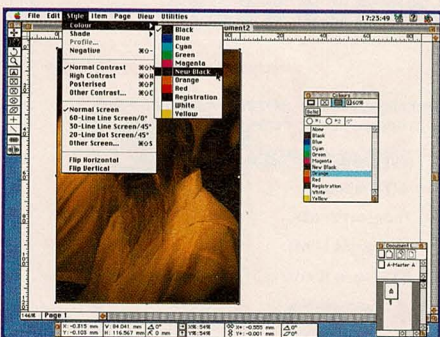
2 *XPress* thinks the picture and background are one colour mixture. If you output the page to colour separations, you'll get a normal black film with the greyscale image, but the other films which make up the background colour contain negatives of your greyscale image.



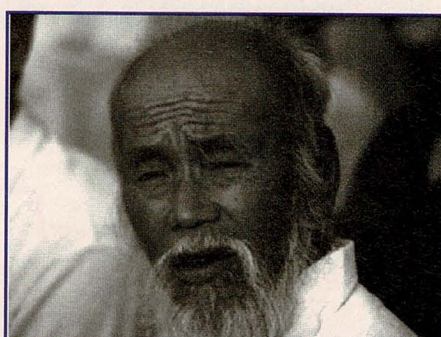
3 Misregistration at the printers could easily ruin your image altogether. The answer is to combine the background colour into the halftone TIFF itself. Start off by reminding yourself how the background colour was made up.



4 Create a new colour made up from the background colour plus 100% black. To all intents and purposes, this will look and print just like black, despite the extra colours backing it up.



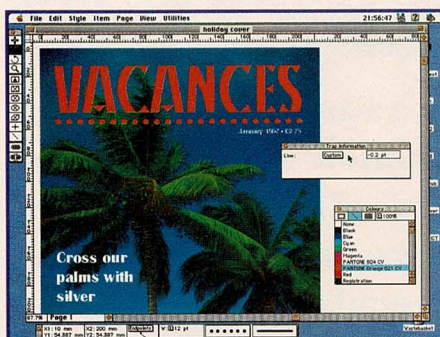
5 Select the image with the **Edit** tool, then go to the **Style** menu, select **Colour** and drag your cursor down to the new colour you've just created. When you release the mouse button, there should be no discernable change in the appearance of the picture.



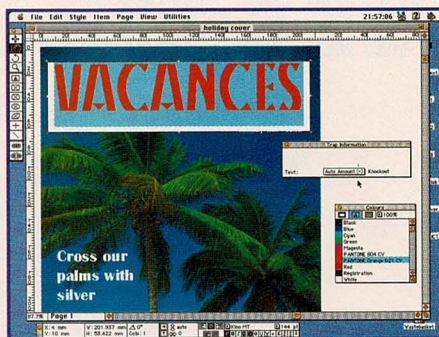
6 However, because the background colour is now also incorporated into the TIFF colour with the 100% black, the films will separate as you intended: one black halftone, plus flat tints for the background colour.



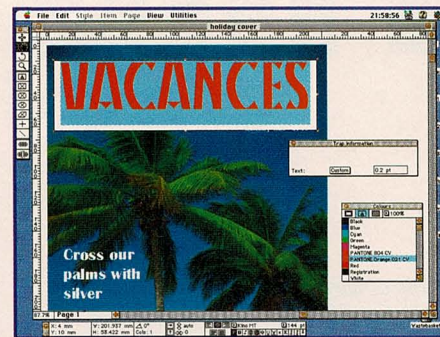
Text on multicoloured backgrounds



1 Registration errors with special colours (such as this fluorescent orange) tend to be more obvious because the fluorescent ink has nothing in common with the process colours. However, you can't specify a higher trap value for the fluorescent colour in the **Trap Specifications** dialogue box when it's used in front of a multicoloured background. You can, however, force the background photograph to choke into the dotted line under the masthead. Highlight the line and in the **Trap Information** palette select **Custom** and specify a negative trap value.

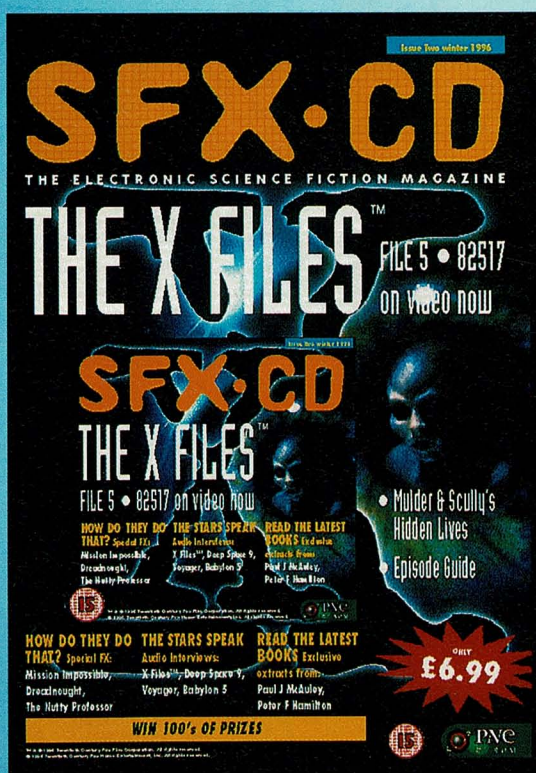


2 When you try to do the same for the text, you're stuck. Due to the limitations of PostScript, you can't choke a multicoloured background into type outlines. Trying to select a choke value will result in XPress defaulting to a trap-free **Knockout** – leaving you vulnerable to the "white gap" syndrome.



3 What you can do is force the type to spread by a slightly larger measure than the default trap specified in the **Trapping Preferences** dialogue box. In the **Trap Information** palette, select **Custom** and enter a positive trap value. Be careful, though, because your type risks filling out and looking blobby if you overspread it. This method certainly isn't recommended for fine type.

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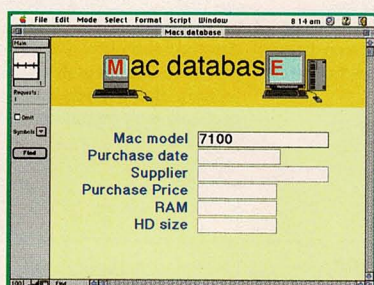


Find that data

FileMaker Pro 3 has a very powerful and easy-to-use Find function. After searching high and low, Derek Smith finally locates it – and shows you how to zero in on those elusive records. Binoculars provided, bring your own camouflage gear.

Duplicates

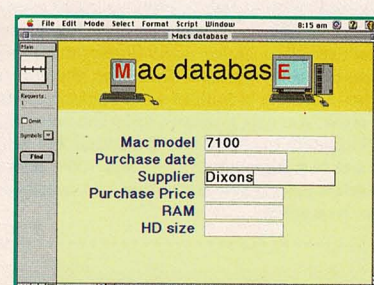
You can find records which contain duplicate data in a field by typing **I** in the appropriate field. For instance, if you kept a record of serial numbers in this month's example database, you could use this technique to check for duplicates. You can then correct or delete any duplicated records.



1 Your first task is to find out how many 7100s you have. There are four types in the database: 66MHz, 80MHz, DL and AV models. All you need to do is enter Find mode and type 7100 in the Model field.



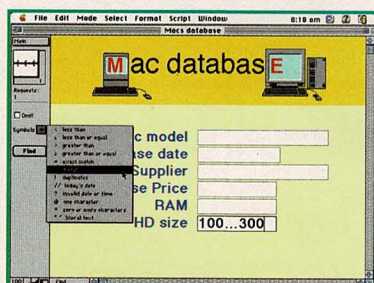
2 This finds every record which has that four-character "word" anywhere in the Model field. In this case it finds all your 7100 Macintoshes, regardless of the exact model.



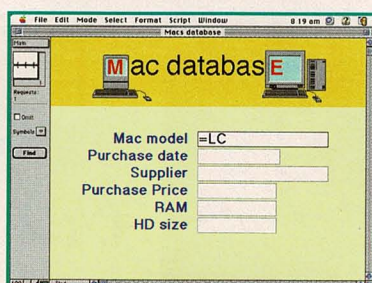
3 You now only want those 7100s bought at Dixons. Enter Find mode and type 7100 in the Model field and Dixons in the Supplier field. This will find records which have both "7100" and "Dixons".



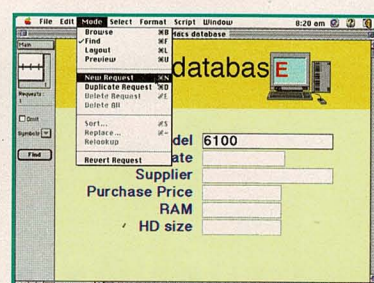
Finished example database and FMP Pro 3 demo.



7 To find Macs with a hard disk between 100 and 300Mb, type 100...300 in the HD Size field. This also works with dates, so typing 1/1/95...31/12/95 in Purchase Date will find all the Macs bought in 1995.



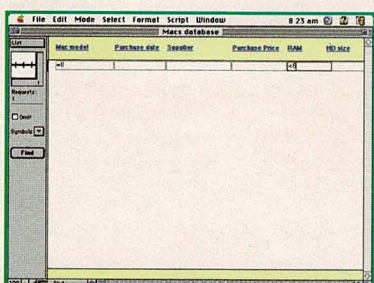
8 You now want to find all the original LCs, but not newer LCs such as the LCII or LC475. Type an [=] first, making the entry =LC. This finds records where "LC" is a separate word in its own right.



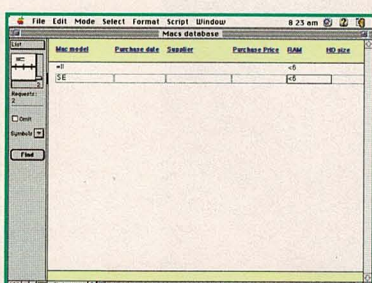
9 You're looking to upgrade your 6100s, except for those with a DOS card. To do this, enter Find mode and type 6100 in the Model field, then choose New Request from the Mode menu.

Three dots

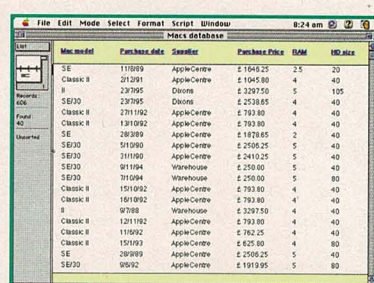
To get the three dots mentioned in step 7, press **[option]** ; or use the **Symbols** pop-up menu above the **Find** button.



13 Now type =I in the Model field. This will exclude Iivx's for example. On the same request type <6 in the RAM field (you could also type <5). This will find Mac II's with no more than 5Mb of RAM.



14 Choose New Request from the Mode menu and enter SE in the Model field. This will find all the SEs. You also need to enter <6 again, otherwise you'll end up finding every SE.



15 When you hit the Find button, you'll see it nearly worked. Unfortunately, you'll have ended up with Classic IIs as well, because they have the distinct word "II" in their name.



Over the past few months we have looked at how to create and structure a database, especially with regard to FileMaker's new relational abilities. But if getting data into your database is your first priority, then your second should be how to find it quickly so you can get it out again.

FileMaker Pro 3 has a very easy-to-use Find function. Start by selecting Find from the Mode menu. You are presented with the current layout, but with all fields empty. Type, say, Hat into any field, click the Find button, and FileMaker will find all the records which contain those three letters in that specific field.

But what about something beyond that? This walk-through will demon-

strate the techniques you can use to:

- find "Hat" but not "Hatstand"
- find "Hat" or "Cap"
- find "Hat" of size "Small"
- find "Hat" of any size except "Large"
- find records with empty fields

The best way to demonstrate these various techniques is by detailing some practical examples. I'll use a database of Macintosh computers, because its contents will make sense to anyone who knows Macs. It's a simple database with fields for the model of the Macintosh, the date it was purchased, the amount of RAM and the size of the hard disk.

The database can be found on this month's CD, so you might like to open it and follow this step-by-step guide. If you would like to try out the techniques but

don't have a copy of FileMaker Pro 3, then don't worry because there's a demo version on the CD which will enable you to do everything covered in this tutorial.

All the techniques described here are equally effective in earlier versions of FileMaker Pro. However, there will be a few minor discrepancies, such as the names of pull-down menus. You may also be able to apply the same principles to other database programs, although the commands will differ.

Once you feel confident with the basic techniques discussed here, you'll be able to search any of your own databases. However, bear in mind that there are plenty of advanced techniques which I've never seen printed anywhere before. We'll reveal those secrets in future issues!

Layouts

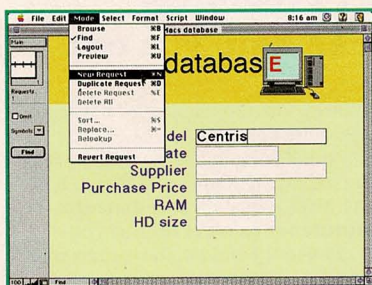
The example database has two layouts. One shows one record at a time, while the other displays the records in a list. You can swap between these layouts using the pop-up menu at the top of the tool bar.

Equal to...

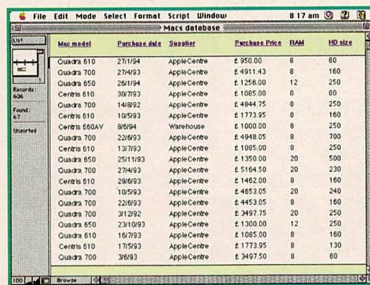
For the "less than or equal to" symbol, simply hold down [option] and then press < (the key with the comma on it), or just use the Symbols menu.

Your help

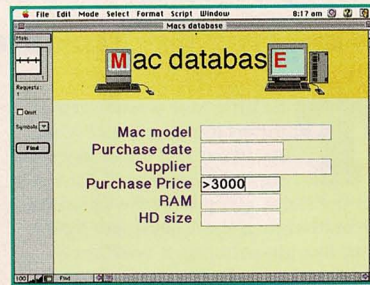
This is another article in an on-going series about FileMaker Pro 3. We want to hear from you. What topics would you like us to cover? What questions need answering? Or do you have some tips you would like to share? Write to us at the address listed on page 141.



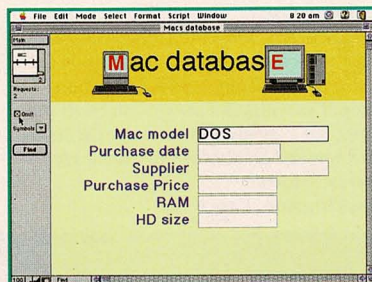
4 To find all Macs which are either Centris or Quadras, enter Find mode and type Centris in the Model field, then choose New Request from the Mode menu. This gives you a second request form.



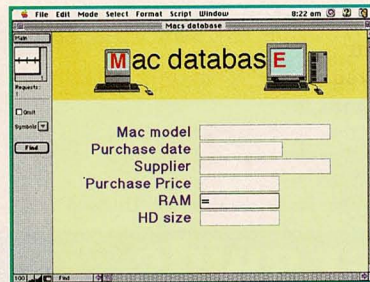
5 Type Quadra in the Model field and click Find. This will find all records with "Centris" or "Quadra" in the Model field. You can keep choosing New Request for as many parameters as you want.



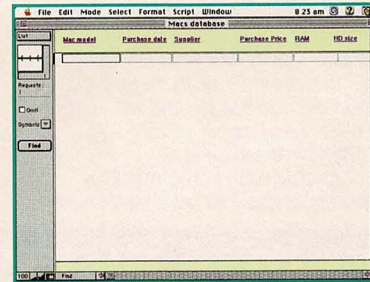
6 To find all Macs worth more than £3,000, type >3000 in the Purchase Price field. This works with dates, too, so typing <1/1/96 in the Purchase Date field will find Macs bought before that date.



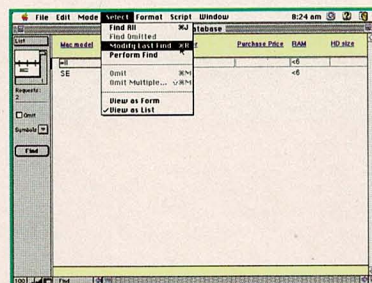
10 Now type DOS in the Model field and click the Omit box on the tool bar just above the Symbols pop-up menu. This will find all the 6100s and then reject the DOS models.



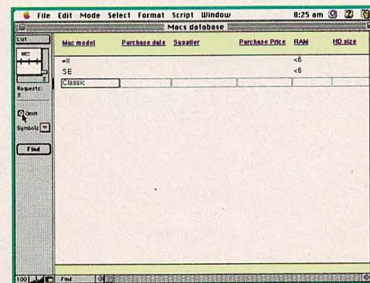
11 You know that some of the records need updating because they don't have an amount entered in the RAM field. To find all the records where RAM is empty, just type [=] in the RAM field.



12 Let's put it all together. You want to find all the Mac II's (not IIx's or IIsi's) and all the SE's (including SE/30s) which have no more than 5Mb of RAM. Start by entering Find mode.



16 Rather than starting from scratch, choose Modify Last Find from the Select menu. This restores your previous Find requests, enabling you to rethink the search and add further requests.

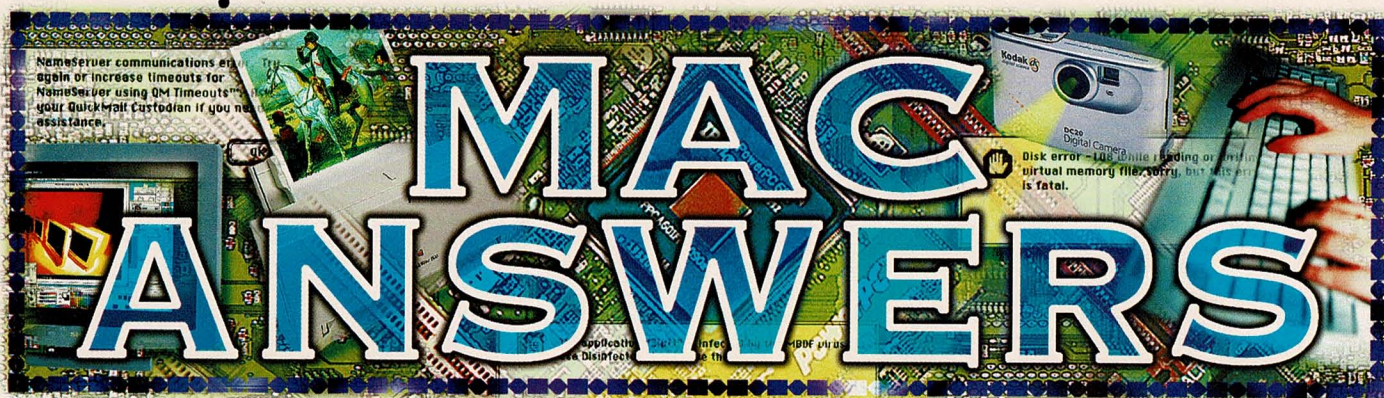


17 Choose New Request again and enter Classic in the Model field. Now tick the Omit box on the tool bar. When you perform the Find, you'll end up with exactly what you wanted.

18 There you go – you are now an expert in finding data. The important thing to bear in mind is that no matter how convoluted and specific your requirements, you can almost certainly develop a Find request to achieve them.

Typing two or more details on the same request form will find records which have both or all those qualities. In Boolean logic (named for the 19th century mathematician), this is referred to as an "and" statement – you get records which match condition 1 and condition 2.

Typing details on two or more separate forms will find records which match at least one set of criteria. In Boolean logic this is an "or" statement – the records match condition 1 or condition 2.



Whether you've got the latest technology or a well-loved SE/30 that's seen better days, you can still encounter problems. Whatever your predicament, Lindsay Bruce can help you out.

The little Mac wasn't seeing things too clearly any more. Its owner had long since consigned it to the cupboard under the stairs, along with the Christmas decorations and the 1,000-piece jigsaw with five bits missing. It was lonely, and it longed to feel the race of excitement as electric pulses coursed through its circuits once more. But that was months ago, and now dust was clogging its floppy drive and a small family of spiders lived under its motherboard.

It had existed only to serve and make its owner happy and productive, but since the Performa 6400/180 (with GeoPort™ and 16Mb of RAM!) had arrived, the little Classic had been left switched off. Oh to be alive again, to feel that world of infinite loops and sub-routines.

It felt a presence.

"Hello?" It ventured.

"CLASSIC 4/40 WITH BUILT-IN SCREEN AND OPTIONAL HIGH DEN-

SITY FLOPPY DRIVE?" The voice that spoke was deep and thoughtful.

"Um, yes?"

"I'VE COME TO TAKE YOU AWAY FROM ALL OF THIS."

There was a pause.

"DARK IN HERE, ISN'T IT? IS THAT A JIGSAW? OH MY."

"Are you a New Model?" The Classic was uncertain and suspicious.

"NO. YOU MIGHT SAY I'VE BEEN AROUND FOR SOME TIME."

The Classic's floppy drive whirled.

Anything was better than the cupboard.

"Will there be Business Applications and Productivity Enhancers?"

"POSSIBLY. AND NOW WE MUST GO. IT IS YOUR TIME."

"It is?"

"YES."

The cupboard began to fade.

"I'm obsolete, aren't I?"

"YES."

The Classic felt deflated. This was a

problem. Then something from its past rose, quite unbidden.

"I could write in to MacAnswers at MACFORMAT, 30 Monmouth Street, Bath BA1 2BW, e-mail them at macformat@futurenet.co.uk or fax them on 01225 446019 and ask the experts what to do."

"YOU COULD DO THAT, CERTAINLY."

Another pause.

"ER... TELL ME, WHAT ARE YOUR FEELINGS ON CURRY?"

Second class

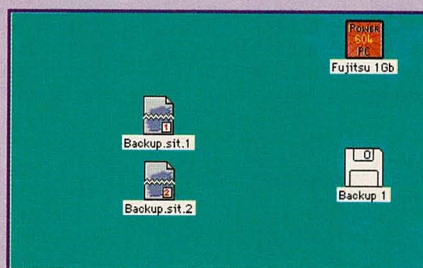
Desktop files

Q I've been using Photoshop 3.0 for some time, but it now comes up on my screen as "GE Stamp", not Adobe Photoshop. I've reinstalled the application several times, but to no avail. What is this GE Stamp, and how do I get Photoshop to come back?

Barry Smith
Barkingside, Essex

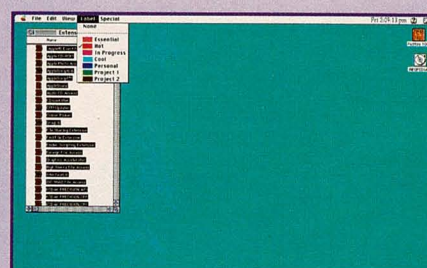
The definitive installer guide

In MACFORMAT 44 we included a full working version of the *Infopedia* multimedia encyclopedia. Since then, we've had reports of some people having problems installing it. While we haven't had any trouble with it in the MACFORMAT office, we do take such reports seriously. If you're experiencing any problems with *Infopedia*, send us full details at "Infopedia Answers", MACFORMAT, 30 Monmouth Street, Bath BA1 2BW, or e-mail macformat@futurenet.co.uk with "Infopedia" in the subject line. We'll look into all problems reported and bring you a full report in these pages. In the meantime, here's our definitive installer guide. This applies not only to *Infopedia*, but to all software you install on your Mac.



1 Back up your hard drive.

This is particularly important if the software you are installing includes Extensions or Control Panels. Ideally, use a removable or external hard drive, but if you don't have one of these, you can always use floppy disks. Aladdin's *Stuffit Lite*, on the Cover CD (or *Drop-Stuff*, inside the CD Resources folder), can compress your files into archives, saving up to 70% of their original size. Give priority to your documents – you can reinstall software from its original disks (but check they're okay first).



2 Sort out your System.

It's a good idea to know where the Extensions and Control Panels in your System Folder came from. Before you install software for the first time, highlight all the Extensions already in your System Folder and give them a colour from the **Label** menu. Then do the same for your Control Panels and Preferences. It's very simple, but it makes it a lot easier to revert to your System's pristine state later. To be really thorough, do this again after installing software and give a unique label to all the files each program installs.



AGE Stamp is part of Adobe's *Gallery Effects* package, a set of graphical effects filters for use in *Photoshop*. Either you have *Gallery Effects* installed in your *Photoshop Plug-ins* folder, or possibly you've acquired GE Stamp as a sample filter either with *Photoshop* or with another application.

The most likely cause is that your Mac has got confused about which type of file *Photoshop* is. It seems to be treating *Photoshop* as part of the *Gallery Effects* plug-ins package. To get around this, you need to rebuild your Mac's database of file types, stored in the invisible Desktop files. Rebuilding the Desktop can cure problems such as this, as well as sorting out missing custom icons, invalid file creation dates and that bizarre message you occasionally get when you double-click on a file: "The document could not be opened because the application that created it could not be found". To rebuild the Desktop, simply hold down **[command]** and **[option]** while you **Restart**. This forces your Mac to go through the contents of its hard disk, cataloguing each document and the application it belongs to. If this doesn't work and you still get GE Stamp appearing, use the **Find...** option (under **File** in System 7 and later, and under the Apple menu in System 7.5 and later) and do a search for **GE Stamp**. This should locate the rogue plug-in and you can

then remove it, or preferably delete it completely. You can always copy it onto a floppy disk before deleting it, just in case you want to use it later.

Floating in space

Floating Point Unit

Q I recently bought the game *Star Trek: The Next Generation: A Final Unity* but discovered that it requires an FPU (floating point unit), which my Performa 630 doesn't have. I've tried SoftwareFPU, but it keeps crashing. Is there any way I can play the game without an FPU, and if not, then what is the cheapest upgrade?

Tim Fullerlove
Hanley Castle, Warks

A An FPU is a processor that specialises in mathematical calculations – number crunching – and can perform these many times faster than your Mac's main processor. If your Mac is based on a 68030, 68040 or any of the PowerPC processors (601, 603, 603e, 604, or 604e), then you have an FPU built-in as part of the main processor. If, however, your Mac is based on a 68000, 68020 or 68LC040, then it lacks an FPU and you won't be able to run some mathematically intensive applications. The Performa 630 is based on a 68LC040, and so lacks an FPU. Common applications that need an FPU include spreadsheets and 3D programs. Games that require an FPU are unusual, but *A Final Unity* is, unfortunately, one that does. *SoftwareFPU* (on our Cover CD inside the **Resources** folder every issue) is a clever Extension that fools your software into thinking your Mac does have an FPU, thus enabling you to run some software by getting the main processor to do all the legwork. Unfortunately, this method doesn't always work and you may experience frequent crashes.

Performa 630 owners can upgrade their Macs to include a full FPU by swap-

ping the 68LC040 processor for a full 68040 chip. This is possible because the chip sits in a socket and can be easily removed and replaced (see *MACFORMAT* 37 to find out how to do this, or turn to page 144 to find out how to get hold of a copy), whereas most processors are soldered to the motherboard – something that requires a much more costly, and complicated, upgrade. A 33MHz 68040 costs around £175, which is a big outlay if you're just going to use it to shoot Romulans out of the sky. FPU upgrades for older Macs – for example the LC series – are available and range in price from £30 to £130. For more details about these, contact Mygate Computing on 0800 132591. Of course, in addition to playing *A Final Unity*, you will also be able to try out some of the new exciting 3D software. We've got a few demos on this issue's Cover CD to give you a taster.

The dreaded Type 11 error – often fatal, always unwelcome. And does that Restart button ever work? No.

Simply unknown

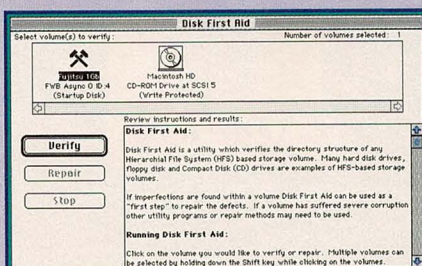
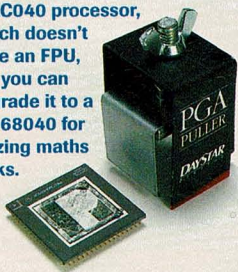
Error type 11

Q I have an *Electronique d2* CD-ROM drive. Whenever I try to open the *Read Me* document on the *MACFORMAT* Cover CD, or any of the *Read Me* files attached to programs, I get an error message saying "The application 'unknown' unexpectedly quit because an error of Type 11 occurred." It is very frustrating!

Philip Phillips
Italy

A Oh, the joys of the "Type 11" message! The application you are opening when you double-click on *Read Me* files is probably *SimpleText*, which comes with all Macs. Officially, an error Type 11

The Performa 630 is based on a 68LC040 processor, which doesn't have an FPU, but you can upgrade it to a full 68040 for blazing maths tasks.



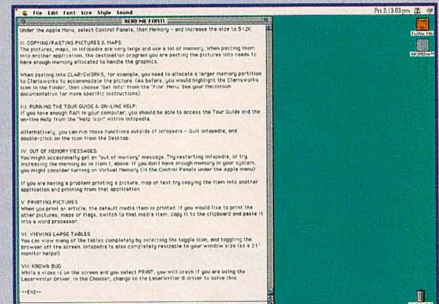
3 Run diagnostic tools.

It's a good idea to check over your Mac's hard disk before you install new software. Disk errors do happen and can be caused by voltage spikes on the mains electricity, shocks to the Mac's casing, and crashes. You may find that the directory structure on the hard disk has one or two errors in it. Before you start installing more software, fix these by running *Disk First Aid*, which came with your Mac (you'll find it on the Disk Tools disk, or on the System CD), or use a repair package such as *Norton Utilities*.



4 Restart your Mac with Extensions off.

Some Extensions, especially virus checkers, can interfere with software installation. You can turn all Extensions off by holding down **[shift]** at startup. But if you're installing software from a CD, you'll need the CD-ROM drive Extensions in your System folder – Apple CD-ROM Extension for an internal or external Apple drive, or any driver software if it's a third-party drive. Use *Extensions Manager* to turn off other Extensions and Control Panels, or move them to another folder, name it "Disabled Extensions" and restart.



5 Read the documentation.

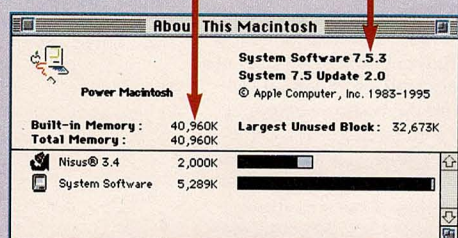
Most programs come with guidelines for installation. They may also contain a list of problems you could experience with the software that weren't solved before shipping. This sometimes includes incompatibility with specific Extensions (*RAM Doubler* is a common one). Also, check any *Read Me* file on the installer disk. This often contains late-breaking information that didn't make it into the manual.



The do-it-yourself problem-solving guide...

One of the most common causes of problems on your Mac is Extensions or Control Panels clashing in your System Folder. It's easy for you to check if this is the case. **Restart** your Mac and hold down the **[shift]** key. Release the key when you get the message, "Welcome to Macintosh."

Amount of RAM installed System software version



is a "hardware exception error". In actual fact, the Type 11 error encompasses almost any unknown error that might occur on your Mac, and you are actually quite lucky – usually Type 11 errors result in your Mac crashing.

The problem here is most likely to do with *SimpleText*, in that it has either got damaged or is somehow unable to read files from your CD drive. The solution is fairly simple – reinstall it from your original System disks. Failing that, nearly every Mac application comes with a copy of *SimpleText*, so reinstall it from an application disk or CD.

If these solutions don't work, try a simple experiment. Copy one of the Read Me files from the CD onto your hard drive and try opening it from there. If *SimpleText* will open it from your hard drive but not the CD, it may be that there is a conflict with the CD drive's driver software. In this case, you should re-install the driver software, and if this is not successful, contact Electronique d2 on 0171 833 0009 to get an updated version of the driver software.

Extensions off." If everything now works, then the problem is likely to be an Extensions conflict.

The only way to work out which item is the culprit is by trial and error. Remove a few Extensions or Control Panels, then restart your Mac, without holding down **[shift]**. Keep on doing this until the problem no longer occurs and you've found the offending software.

If this doesn't work, try rebuilding your Desktop. Start your Mac holding down **[command]** and **[option]**. You'll get a message asking if you want to rebuild the Desktop. Click **OK**, wait for it to finish and see if this solves your problem.

If you're still stuck, use the form on page 67 to write to us. We'll need to know a few facts about your Mac, so when you're in the Finder, select **About This Macintosh** from the **Apple Menu** – the crucial things to note are shown at the left.

Return to sender

Memory addressing

Q I have recently installed a 72Mb SIMM in my Performa 450. Before fitting it, my system took 1,480K of memory. Now it's taking up 30,138K! How do I rectify this?

J Gallacher

Laurieston, Falkirk

A The Performa 450 (otherwise known as the LCIII) can accommodate up to 36Mb of memory. However, like many old Macs, the Performa 450 and LCIII use an older memory addressing scheme rather than the newer 32-bit Addressing found in Quadras and some PowerMacs by default. Without 32-bit Addressing turned on, your Mac can't use more than 8Mb of RAM because it can't allocate enough "addresses" for memory locations. If you fit more than 8Mb to your machine, the Mac will recognise that the memory is there, but it won't be able to use it. Hence your Mac thinks the System is taking up nearly 30Mb of RAM because it can't work out

what's happened to the other 28Mb of it. The good news is that the solution is painless; open the **Memory Control Panel** and switch 32-bit Addressing on, then **Restart** your Mac.

Most older 68K Macs (such as the Classic and LC) can't be expanded beyond 8Mb of RAM because they can't support 32-bit Addressing. To see if you can expand your Mac further than 8Mb, turn to our Mac Facts table on page 124. Bear in mind that this is a complicated issue, however, because certain 68K Macs need to use SIMMs in pairs (See "SIMM City" below), so your Mac may need 10Mb of SIMMs fitted before it can access the full 8Mb.

SIMM city

Fitting RAM

Q I want to add extra RAM to my Quadra 660AV. It already has 8Mb, so if I buy a 16Mb SIMM, will I then have 24Mb, or do I have to get rid of my original memory?

Sean Marrow

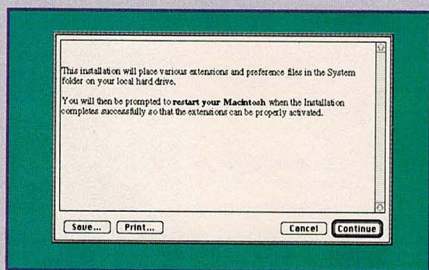
Via FutureNet

A The Quadra 660AV has 4Mb of RAM on board, and two 72-pin SIMM slots, enabling you to fit a maximum of 68Mb of RAM. Your Mac has 8Mb of RAM, so one of these SIMM slots is occupied by a 4Mb SIMM, leaving the other slot free. So in short, yes – fitting a 16Mb SIMM will give you 24Mb of memory.

The 660AV has a robust memory management system that makes your life easy in this respect. In most older 68K Macs as well as the original PowerMacs, SIMMs have to be installed in pairs and have to be of the same size. Not so on the 660AV, which will quite happily accept two different sized SIMMs in the two separate slots.

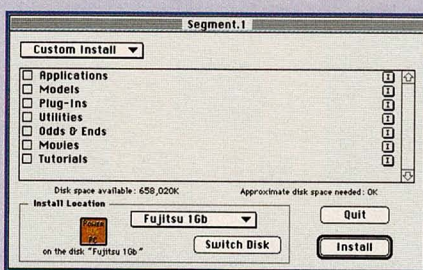
To fit the new SIMM, remove your Mac's case by snapping the catches on the back of the lid and lifting it off, making sure of course that it's both switched

The definitive installer guide continued



6 Run the installer

Make sure that you have no other applications open when you run the software installer. Some installers give you the option of continuing to work and restarting at your leisure, but for most installers (including *Infopedia*), this isn't the case. If you are running another application at the time, be warned also that any unsaved work will be lost when you restart. Apple's own installers force any other applications to quit before installation begins, neatly side-stepping the problem.



7 Custom installs

Some installers enable you to customise what files you install. Options can include 68K, PowerMac, or both versions of the software, tutorial files, Extensions, and electronic documentation. If you're installing the software for the first time, you should go for the default installation. If you're re-installing the software, use the custom install option. *Infopedia* does not have a custom install option, so if you have QuickTime 2.1 or later, you may want to preserve this by moving it out of the Extensions folder.



8 Restart your Mac

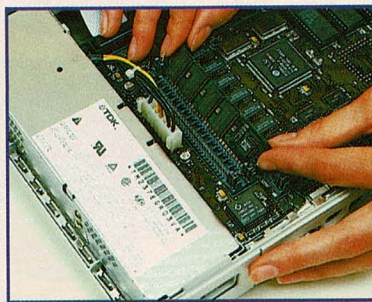
This time with Extensions on. If you moved any items out of your Extensions or Control Panels folder, return them now. Try running all your software (including what you've just installed) to ensure it's all working. You should also put the original disks somewhere safe and, if possible, make back-up copies. (If the original disk is a CD, this is less of an issue. Backing up 650Mb may not be practical, and CDs are more robust than floppies anyway – but still treat them with respect and avoid using them as coasters.)



off and disconnected from any peripherals. Many resellers provide you with a disposable anti-static wrist strap, which protects the SIMMs and your Mac from the static electricity charges on your body; make sure you're wearing this correctly. If you don't get one of these, you can either buy your own from Maplin (contact them on 01702 554000) or keep the power lead for your Mac plugged in but not switched on, and touch the metal casing of the Mac's power supply. This will discharge any static from your body to earth.

Unwrap the SIMM from its protective plastic bag, being very careful not to touch the edge pins. In the 660AV, the SIMM slots are positioned on the right hand side of the motherboard, behind the floppy disk drive. Gently push the SIMM into the free slot at an angle of about 30 degrees and then push it upright. Two clips on either side of the SIMM slot should slide home to secure it. Put the casing back on to your Mac and connect all the cables and peripherals, then start it up. Check how much memory the Mac is using, via the **About this Macintosh...** box (under the Apple menu). If all has gone well, you should find that you now have 24Mb of RAM. If the new amount of RAM is not displayed, follow the instructions again (remembering the anti-static procedures) and go back and make sure that the SIMM is seated in the socket firmly.

Fitting SIMMs is fairly straightforward but delicate, and best not attempted after



Fitting SIMMs in your Mac is easy. Pop the SIMM into the slot at a 30-degree angle from the vertical, and then push it upright.

three pints down the local boozier at lunchtime. Macs are delicate beasts and very sensitive to inexperienced probing fingers. If you are unsure of your technical abilities – or just want to be on the safe side – get an Apple authorised engineer to do the work for you. If you do carry out the work yourself, you risk invalidating any Apple warranty that your Mac may still be covered by.

Memory for free – almost

Virtual memory

Q Can you tell me if I'm missing something? Doesn't Virtual Memory do the same thing as RAM Doubler? If so, why bother forking out good money for RAM Doubler when Virtual Memory is free? I like Virtual Memory!

**Iain Mackenzie
Plockton, Wester Ross**

A No, *RAM Doubler* is not quite the same thing as Virtual Memory. The latter involves allocating some of your hard disk space to use as if it were RAM. *RAM Doubler* (which scored 92% when we reviewed version 2 in *MACFORMAT* 43) achieves its miraculous memory expansion – up to three times physical RAM – by three methods: improved memory management, on-the-fly data compression and its own version of Virtual Memory. It only uses Virtual Memory as a last resort when you are running more applications than will fit real RAM, even with its data compression, so it's kinder on your hard disk than Apple's implementation of Virtual Memory.

It's also much faster and barely slows your Mac down at all – it's hardly noticeable, even using benchmarking software. Yes, Virtual Memory is free, and very handy if you want to run lots of applications at once, but it's sloooooowwww because reading data off disk is much slower than swapping it in or out of RAM.

As the icing on the cake, *RAM Doubler* works with most applications – including *Photoshop*, which suffers some incompatibility problems with Virtual Memory – and even some games. *Marathon* and *Descent*, for example, both run happily with no noticeable slowdown under *RAM Doubler*. *RAM Doubler* enables you to do the same thing as Virtual Memory but more reliably and much more quickly – that's what you pay for. *RAM Doubler 2.0* costs £71 – for details contact Computers Unlimited on 0181 357 5758. **MF**

Ask the experts...

If you send in a question for the *MACFORMAT* experts to solve, please fill in and include this form (or a copy of it). And please make sure that you include all the relevant details – version numbers of software and so on – so that we have the best chance of helping you. Send your form and question to: MacAnswers, *MACFORMAT*, 30 Monmouth Street, Bath BA1 2BW; or fax it to us on 01225 446019.

Name

Address

.....

.....

.....

.....

Your Mac
(For example, Performa 475, 7600/120, PowerBook 5300):

.....

System version
(see *About This Macintosh* screenshot on page 70):

Amount of RAM
(see *About This Macintosh* screenshot on page 70):

Are you using Virtual Memory? YES/NO
(This is accessed from the Memory Control Panel under System 7)

Do you have 32-bit addressing or Modern Memory Manager (PowerMacs only) turned on? YES/NO
(This is accessed from the Memory Control Panel under System 7)

Details of any relevant hardware which could help us to answer your question:

.....

.....

Now, use this space to describe your problem or question. Please include as much relevant information as possible, and continue on a separate sheet if necessary.

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CALL 0171 383 2727 FAX 0171 383 3434



PPC WORKSTATIONS



POWERMAC 7600/132
132MHZ 604, 256K LEVEL 2 CACHE
16MB RAM (EXPANDABLE TO 256)
1.2GB INTERNAL HD
8 SPEED INTERNAL CDROM
FREE MICROSOFT OFFICE 4.21
£1699.00



POWERMAC 8500/180
180MHZ POWER PC 604E
16MB RAM (EXPANDABLE TO 512)
2GB INTERNAL HD
8 SPEED INTERNAL CDROM
VIDEO IN/OUT, 3 PCI SLOTS
£2299.00



POWERMAC 9500/180MP
2 X 180MHZ PPC 604E
32MB RAM (EXPANDABLE TO 768)
2G INTERNAL HD
8 SPEED INTERNAL CDROM
2MB VIDEO CARD, 6 PCI SLOTS
£3229.00



POWERMAC 9500/200
200MHZ POWER PC 604E
32MB RAM (EXPANDABLE TO 768)
2G AV INTERNAL HD
8 SPEED INTERNAL CDROM
2MB VIDEO CARD, 6 PCI SLOTS
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UPGRADE YOUR POWERMAC 7500, 8500 & 9500 TO
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- 1280 X 1024 AT 75HZ
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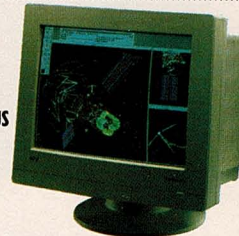
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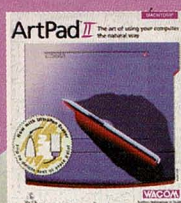
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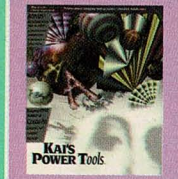


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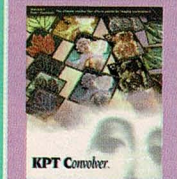


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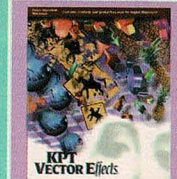
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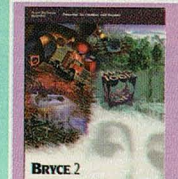
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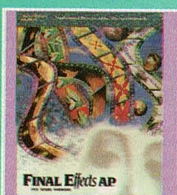
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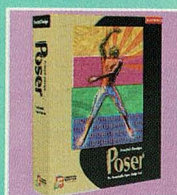
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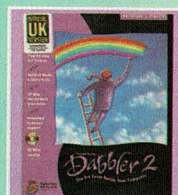
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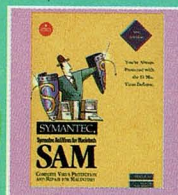
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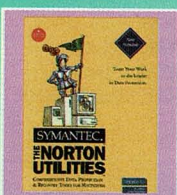
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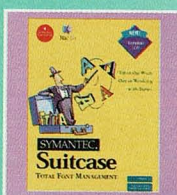
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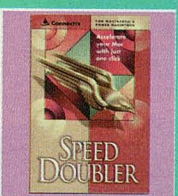
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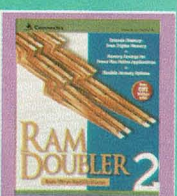
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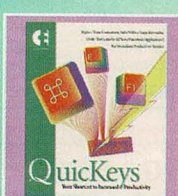
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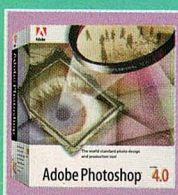
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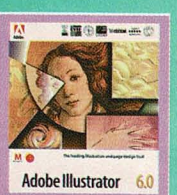
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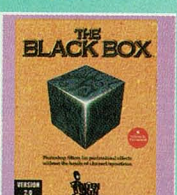
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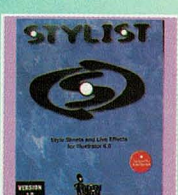
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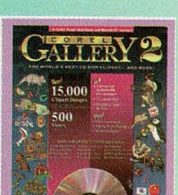
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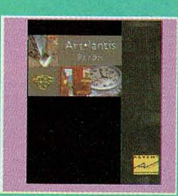
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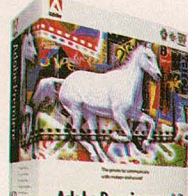
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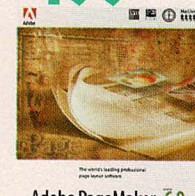


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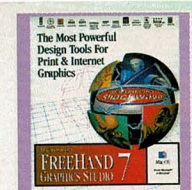
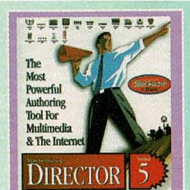
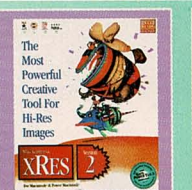
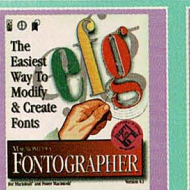
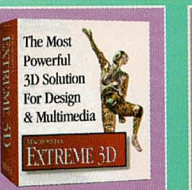
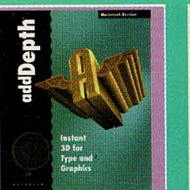
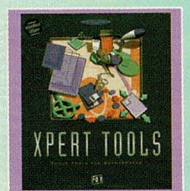
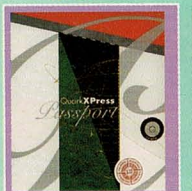
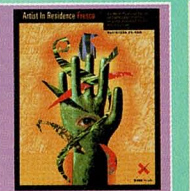
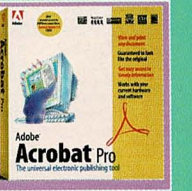
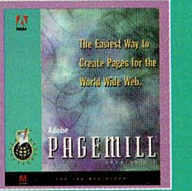
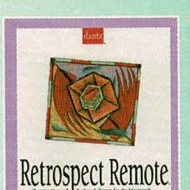
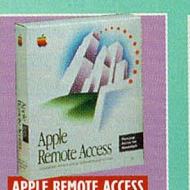
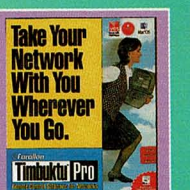
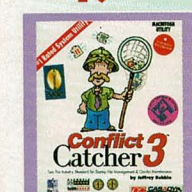
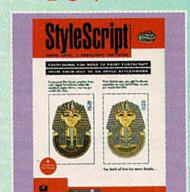
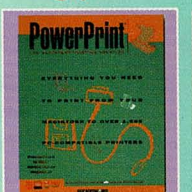
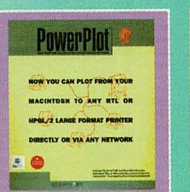
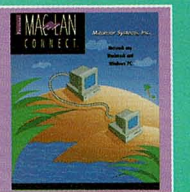
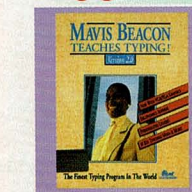
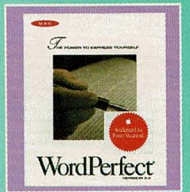
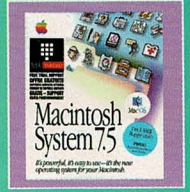
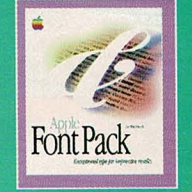
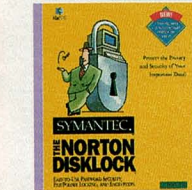
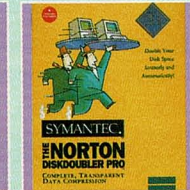
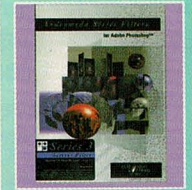
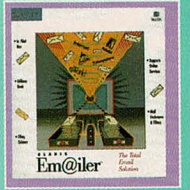
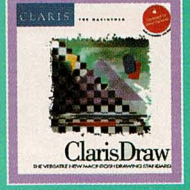
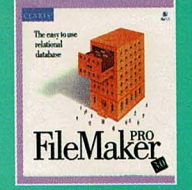
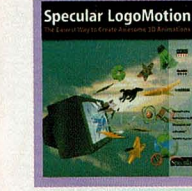
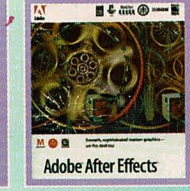
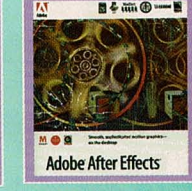
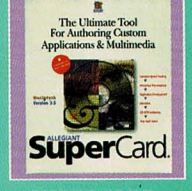
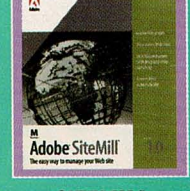
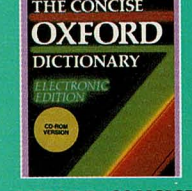
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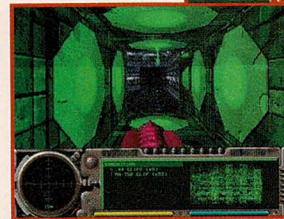
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Four CD-ROMs on tap at the same time - but is it worth the money? See page 80.



The Sony CD-ROM Discman enables you to pose on the move. Page 81.



More battles with the evil Phfors, as *Marathon Infinity* arrives - page 112.



Fractal Design Detailer - paint surfaces straight onto 3D models. See page 86.

Can this card really enable you to run PC software on your Mac? We test PC-compatibility options on page 74.



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will need to have. Free RAM is the requirement excluding the System. Processor: Check the table on page 124 for your Mac.



DOSsing around

These days, it's possible to convert your Mac into a fully fledged IBM PC-compatible. Once you've worked out why you'd need to do this, Jansen Dennett and Rod Lawton show you how...

Who's Jansen?

Jansen Dennett is one of the technical experts working in Future Publishing's Computer Services department. He specialises in installing and maintaining PCs (but has managed to switch on a Mac once or twice).

Ever wanted to run the latest piece of software, only to find out that it's been released solely for the PC platform? Isn't it frustrating when your next-door neighbours and friends are gloating about the latest game, just to discover it hasn't been released for the Mac? Terminally disappointed after surfing the Internet and downloading a program, to find out yet again that it only works on a PC?

One solution would be to go down to Toys 'R' Us and buy a PC, but maybe you can't justify the extra expense, don't have the space for another computer or just feel too embarrassed to ask for a PC over the counter. Well, here's your chance to investigate some of the solutions available, which put PC compatibility into your Mac.

What is PC Compatibility?

To be able to make sense of the PC minefield, and some of the compatibility issues that you face, you need to know a little PC history.

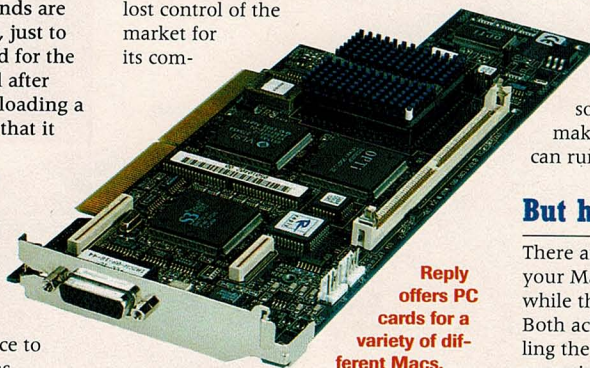
IBM used to make PCs back in the early '80s and was extremely successful. In the light of this success, other manufacturers decided to make computers that would run the same software as IBM

machines. To increase confidence they branded the computers as IBM-compatible PCs – or “PC clones”.

As the years progressed, the increasing number of clones meant that IBM lost control of the market for its com-

ponents. Despite this, they have largely taken over the world, and it's not uncommon to find that the one piece of software you really have to have is only available in a PC version.

One solution would be to have two computers on your desk and buy a chair with wheels. The more elegant solution, however, would be to make your Mac emulate a PC so you can run that vital software.



Reply offers PC cards for a variety of different Macs.

But how?

There are two ways to emulate a PC with your Mac: one is based on hardware while the other is based on software. Both achieve the same objective, enabling the standard DOS or Windows operating system to run on a Mac without further modification. Once you have your DOS or Windows operating system running, you can then use any of the PC software titles available on your Mac. (At least that's the idea.)

The hardware-based solutions come as cards that plug into your Mac and use the existing screen, keyboard and hard disk, while adding the other missing components needed by the PC operating system. The hardware solution will provide you with two computers in one box that can run concurrently.

The software solution takes all the

puters, an arena that is now dominated by Intel and Microsoft.

The operating system that these computers used, MS-DOS, was written by Microsoft, and the processors were made by Intel. Just to confuse matters further, Microsoft's MS-DOS and Intel CPU's were cloned too. That is, third party companies made cheaper but compatible alternatives.

So PCs aren't really like Macs. They're really a bunch of machines from different makers using different but compatible

Jargon Busters

■ **Partition:** disk partitioning enables you to split a disk into sections; each section can have a different operating system. The disk must be partitioned in this way before any data is put in it. Normally disks are allocated as a single partition to make full use of the disk. You can change the partitioning yourself, but it's a tricky process. Most suppliers suggest you use the drive file system instead.

■ **Drive file:** this enables you to create an image of a PC disk as one file on your Mac – when you switch into PC mode, the software fools the PC into believing that the drive file is actually a separate hard disk.

■ **LPT1:** the parallel port. Any-thing you choose to print to LPT1

will come out through your parallel port to the device attached to it – normally a printer. PC operating systems have support for three parallel ports (LPT1, LPT2, LPT3), but though virtually all PCs have one parallel port fitted as standard, they rarely have two or three.

■ **Serial ports:** these have the names COM1, COM2 and so on. PCs have support for four serial ports as standard – COM1 to COM4. Most PCs are, however, fitted with two serial ports.

■ **Redirection:** most ports can be redirected to another device. This is how the hardware expansion cards you use to turn your Mac into a PC send information to a Macintosh printer; they redirect either the LPT1 or LPT2

port to go to the printer selected in the Mac Chooser.

■ **SoundBlaster:** these cards give your PC sound capabilities (PCs without sound cards can only go “beep”). This particular card has become the industry standard, and virtually all software supports the SoundBlaster range. You can't add one of these to any of your Mac expansion slots, so instead you need to make sure your card supports it – all the ones we tested did.

■ **VGA:** Video Graphics Array is a common monitor connection type, found mostly on PC-compatible computers. Although the Mac uses a different connector, it can use VGA monitors (which are usually cheaper) via an adaptor or a VGA port on a

graphics card.

■ **SVGA:** Super Video Graphics Array is a revised version of VGA. These days all VGA monitors, graphics cards and cables are actually SVGA, but many people still refer to them by the old name (just to help matters).

■ **Dongles:** software copyright security devices that plug into a PC's serial or parallel port. Without these little boxes attached, the software will not work. They're usually used only in more expensive software (especially music software) because of their additional production costs.

■ **ASPI:** developed by Adaptec, the Advanced SCSI programming Interface is the standard interface between the software and a piece of SCSI hardware.



missing hardware, and emulates it using software alone. In doing so, it creates a "PC window" on your Mac, in which you can run your PC software. You can use them alongside your Mac programs.

So which is better?

The software solutions are generally cheaper, easier to install and update. If you go for the software option, any Mac from the LCII onwards can emulate MS-DOS, but you'll need the speed of at least a Quadra to emulate Windows 3.1, and a PowerMac if you want Windows 95.

The main problem with the hardware option is that your Mac may not have the expansion slot necessary to take the hardware card, or the slots that you do

have may already be full. However, this option does get you round the hardware restrictions which the software option cannot resolve. These include the fact that Macs don't have the same hardware ports as PCs – a good example being the PC games port, for which the Mac has no equivalent. The hardware solutions are also faster than the software option and cause fewer incompatibility problems.

What's available?

Only one company, Insignia Solutions, makes software emulation packages. Its *SoftWindows* range will emulate most PC operating systems, including MS-DOS, Windows 3.1 and Windows 95.

Several companies, including Apple,

Dual-screen set-up

If you only have one monitor, you will have to run your PC card in single-screen mode, where the Mac and PC share the same monitor. When you're in PC mode, it will switch off the Mac display, only showing the PC display.

On a dual-screen configuration you can use two separate screens – one for your Mac display and one for your PC display. This enables you to work in one computer mode and see how work in the other is progressing.

Reply and Orange, make hardware solutions. Together they offer a wide range of products for many types of Macs.

Read on to find out which product will give you the PC compatibility you need, without the headaches.

Installation

Adding PC compatibility to your PC isn't as straightforward as simply dropping an Extension onto your System Folder. If you're worried about taking the lid off your Mac, or about getting caught up on complicated set-up procedures, this could be a big factor in your choice.

We review the PC options available to you from page 77; but here we'll look at installing both software and hardware into your Mac.

SoftWindows

Installing *SoftWindows* is a breeze: any technophobe could do it. When you unpack the box, you'll find a *QuickStart* installation guide – simply follow the five steps and you can have either DOS, Windows 3.1 or Windows 95 installed and running in *SoftWindows* in 15 minutes.

Insert the CD-ROM (or the first floppy disk if you're still using *SoftWindows* 3) and double-click on the **Installer** icon. Choose where you want to install *SoftWindows*, click on the default installation option and away you go.

The installation window will ask you some tricky questions about memory settings for the Deltacache, PC extended memory and Windows Desktop. But

don't panic, *SoftWindows* will optimise these figures for the amount of memory that you have installed in your Mac, providing you with the information you need, so you can click on the **OK** button.

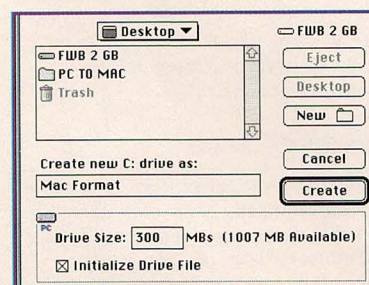
And that's all there is to it, apart from filling in your registration details. *SoftWindows* comes with either Windows 95 or the pairing of DOS and Windows 3.1, so you don't have to do anything else.

In fact, installing Windows 95 on a Mac using *SoftWindows* was a darned sight easier than installing it on a PC!

Apple and Reply cards

Not surprisingly, fitting PC cards is more complicated than installing *SoftWindows*. Once you've opened up your Macintosh, you'll need to rewire the sound and video connections. Full instructions are, naturally, supplied with the cards, and you'll need to work through the installation logically and carefully. Apple and Reply offer essentially the same design of card – even the manuals are exactly the same – so the installation procedure is the same with either firm's card.

If you are using dual screens (see the box) then all you have to do is to plug the PC monitor into the loop-through cable, leaving the Mac monitor alone. If



Software with the Apple and Reply cards enables you to set up a PC hard drive.

you intend to use a PC monitor, you will still need to have a Mac-to-PC adaptor.

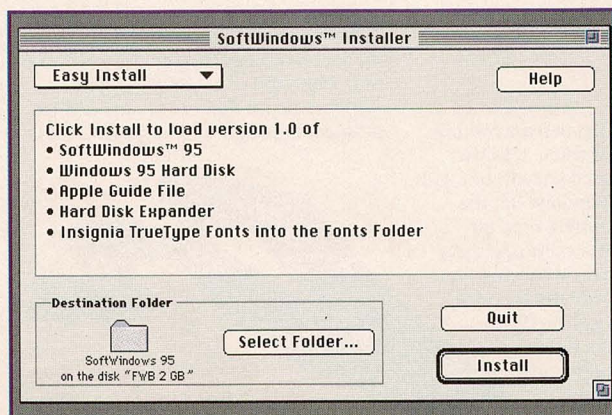
Now that's finished, you're ready to switch on your Mac and install the software. You do need to be running System System 7.5.3 – it's supplied with the card, so it doesn't matter if you don't have it already. This is because if you want PC networking, you'll need Open Transport (part of 7.5.3).

After inserting the *Macintosh PC Compatibility* CD-ROM, double-click on the **Installer**, which is located in the **PC Compatibility Software** folder, then click **Continue**.

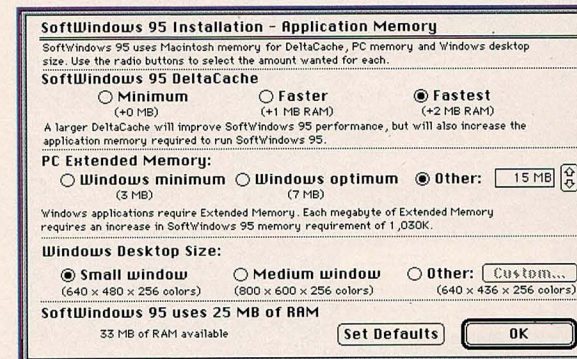
Installing the software is straightforward enough, but then you need to open up the new **PCSETUP** control panel to set up a PC drive file (see the Jargon Busters box). You also need to make changes to the **Monitors & Sound** control panel unless you want your PC applications to emit nothing but

Need for speed

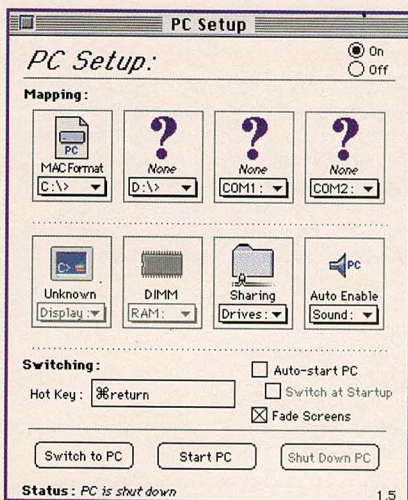
The speed of the PC processors is determined by the clock speed expressed in MHz. That doesn't mean a Cyrix 586 100MHz is as fast as an Intel Pentium 100MHz. The Pentium is more a efficient CPU, so the Cyrix 586 100MHz is more similar in performance to a 75MHz Pentium.



Although it runs PC software, SoftWindows is still a Mac program, so it includes an Apple Guide help system.



SoftWindows includes some complex memory allocation options, but it's okay to leave it to your Mac to decide.



Apple's PC Setup Control Panel makes it easy to allocate your Mac's resources to your PC card.

the Windows 95 installation CD-ROM. Look, we never said this would be as easy as using a Mac...

OrangePC cards

The hardware installation of the Orange-PC cards is slightly easier than the Apple or Reply cards, since there are no internal cables to connect. Once you've opened the case and inserted the card in a spare PCI slot (NuBus cards are also available), you simply close the case and connect the external cable.

This is where the difficulties may start,

an eerie silence.

Now it gets trickier, because you need to install the PC operating system. This means switching into PC mode and being ready with DOS installation disks. You have to do this even if you're installing Windows 95, which doesn't actually use DOS, because until you've installed a DOS CD-ROM driver, the PC can't read

however, as you will now have eight connectors at the end of the external cable, all dangling from the back of your Mac. All the connectors are labelled with meaningless numbers, from P1 to P9, so you will have to resort to the manual for identification, especially as the two PC serial ports have identical connectors, as do the audio in/out ports.

As with the Apple and Reply cards, you can use the OrangePC card with either one or two monitors, using exactly the same procedure.

Depending on what Orange card you have purchased, you will have a choice of operating systems, including MS-DOS, Windows 95 and even Windows NT. This is unlike the Apple and Reply cards, which come only with MS-DOS, rather than Windows 3.1.

Software installation is straightforward and afterwards you have to create a PC drive, just as you would have done with the Apple and Reply cards.

Note that the printer settings have been established so that if you print to LPT2, you will be redirected to your Mac printer. Anything printed to LPT1 will be printed on the printer attached to the parallel port. The Orange was the only card in our tests that has a PC parallel port, meaning you can attach virtually any PC printer directly to this card.

Now you are ready to run the *Orange-PC* software. When it first runs, it displays an Orange logo screen and that's it. We waited for a PC screen to spring

Easy install?

When you install your PC card you'll almost certainly need to install its OS. This may not be straightforward. For example, Windows 95 must be installed from CD, but before your PC card can read the CD you must install DOS drivers from floppy disk.

If you're not very confident installing equipment into your Mac, *SoftWindows* will offer the most elegant solution. You just need to start running the software, and your chosen operating system (Windows 3.1 or Windows 95) will load and start running automatically.

into action, but looked at the manual after waiting for several minutes, and found out that you have to invoke the PC by hitting [command] D or use the command menu at the top of the screen that's installed as part of the *OrangePC* software. This can become a bit tedious, because [command] D only seems to work when you have the *OrangePC* program running in the foreground.

We found that all the PC Compatibility cards were hard work when it came to installing the PC operating system and making it work, and the less-than-specific manuals didn't help.

Memory

If you're running DOS software, you will probably need anything from 1Mb to about 8Mb of RAM. If you're using Windows 3.1 then 8Mb should be a minimum, but you'll need at least 16Mb if you want to use Windows 95.

Emulation

One of the main problems with running a Mac as a PC is the differences in the hardware components of the two machines. Let's look at the equipment common to both Mac and PC, and whether our options can get around these differences.

The keyboard

The keyboards on most PCs have func-

tion keys along the top – the only exception is the recent Windows 95 keyboard, which has two additional but unessential keys. There are no key combinations available on the Mac to reproduce these new keys, but you can reproduce the function keys – even if you have an older keyboard which doesn't have them itself. Simply hold down [command] and the relevant number key.

When you're setting up any hardware preferences in your PC software, it's worth remembering that your Macintosh keyboard layout corresponds to an American PC keyboard, not a standard British PC keyboard. Don't ask us why!

The mouse

The mouse on a PC has at least two buttons; some even have three. Like the Mac, one button is used heavily, but with the introduction of Windows 95, the second button is becoming used for taking short cuts and for distinguishing between moving files and copying files.

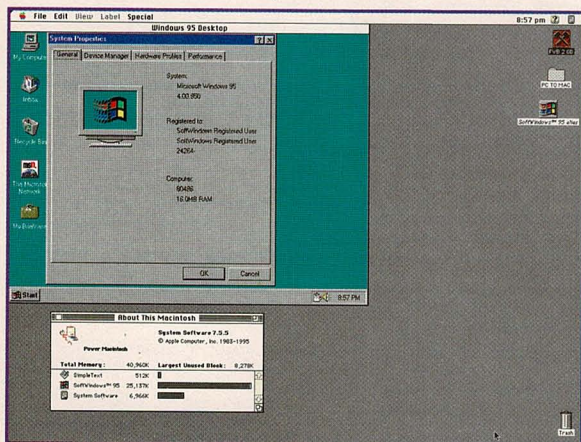
Both *SoftWindows* and the PC cards use the = ("equals") key on the keypad to emulate the right mouse button, an option you can't change. This is awkward and hard to get used to

– especially for right-handers – because you have to "right-click" with your left hand. The Orange card uses a combination of the [command] key and mouse button to simulate a right click.

Alternatively, you can buy a PC mouse – available from most dealers – and plug it into the serial port on the Orange card. This facility is only available with the Orange card, but new Mac-compatibles like Motorola's StarMax also include a serial mouse port, so you could use a PC mouse with any of the cards.

The CD-ROM

The CD-ROM drive in your Mac already has the capability to read both Mac and PC CD-ROMs, but getting it to work in practice isn't quite so straightforward. The Orange card we tested couldn't read PC data when installed in either a Power-Mac 7500/100 or a 7200/75, while *SoftWindows* wouldn't read dual-format CDs (containing both Mac and PC data)



It's lucky memory's cheap at the moment, because if you're intending to run *SoftWindows*, you're going to need a lot of it.



Even simple plug-in cables like this Apple one don't mean everything on a card will run smoothly.



unless the CD-ROM drive was quad-speed or faster. We also had one CD-ROM that worked perfectly on all of the PCs we tried it on, but refused to work for any of our PC-compatibility products.

So, although in theory you should be able to read PC CD-ROMs perfectly easily, it's another story when you come to do it. The Apple cards were the most reliable, but the Orange card and *SoftWindows* told a different story.

The floppy drive

A PC floppy drive has an eject button, so to eject a disk when using a PC under emulation on a Mac you must press the [command] Y key combination.

An increasingly large problem is the use of specially formatted, super high-density floppies for PC software. These don't usually work at all in a Mac and, sadly, most Microsoft products now come in this format.

Equally, using a Mac, there is no support for 5.25-inch floppies, but these at least are virtually obsolete on the PC.

The hard drive

You handle disk access on a Mac that's emulating a PC by creating a drive file. You allocate some of your Macintosh hard drive to this drive file for use while in PC mode.

Using *SoftWindows*, the drive file handles disk access in 32-bit mode. Despite this, the disk access was slower than the PC cards, which were limited to 16-bit access. The maximum size of the drive file you can allocate in *SoftWindows* is 250Mb, while the PC cards are limited only by the size of your hard disk.

Memory

When you use *SoftWindows* to run your PC applications, the memory that the software and those applications use is Mac memory – when you're not using *SoftWindows*, your Mac-based applications still use it as normal. The memory usage for *SoftWindows* is, however, quite high. We used 16Mb for our PC memory and *SoftWindows* itself used a further 9Mb, making a grand total of 25Mb. If you then add on the necessary space for the Mac System software, there's not much room left for any Macintosh applications, even on a 40Mb machine.

If you choose the PC Compatibility card option for your Mac, you'll see the cards come with slots for their own memory. This memory can't be used in the Mac mode, though you do also have the option of swapping the memory with that of your Mac to get the right DIMM combination. Both the Apple and Reply cards use DIMMs, and only the Orange card uses the older-style 72-pin SIMMs.

Both of the Apple cards are supplied

with 8Mb of RAM – on the Cyrix card there is one 168-pin DIMM slot fitted with the supplied 8Mb, while on the Intel Pentium 8Mb is soldered onto the card, with a 168-pin DIMM slot free for expansion.

The cards are also equipped with a Level 2 cache – the Cyrix card has 128K and the Pentium has 256K. Both of these are non-expandable.

The Orange card came with 16Mb on board and has two 72-pin SIMM slots. One housed the 16Mb SIMM, while the other was free for expansion. The card is equipped with 256K Level 2 cache.

Sound

PCs can't output more than a simple "beep" without a sound card. Various manufacturers produce sound cards, but for maximum software compatibility, you need a SoundBlaster-compatible unit.

SoftWindows is the odd one out here, because it can't replicate the output of a PC sound card. The PC cards, though, have sound card capability built in.

The Apple cards' sound reproduction is achieved by the integrated Creative Labs SoundBlaster Vibra 16. As the name suggests, this offers 16-bit CD-quality stereo sound. You will be very hard pushed to find a piece of PC software that uses sound and does not support the SoundBlaster range.

Peripherals

Does your Mac use any peripherals, like a printer, graphics tables, modem and so on? Are you expecting these to work with your PC card?

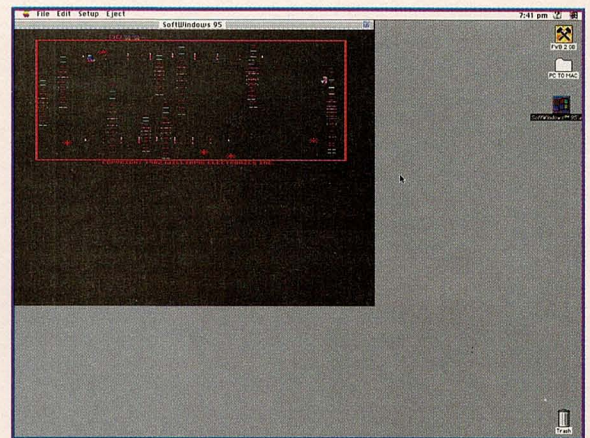
Maybe you should think again. These products do enable you to redirect output, so that the PC side's printed output is redirected to the Mac's printer port, for example – but there's rather more to it than that.

The first problem is drivers. PCs need drivers to handle any peripheral. If you're installing Windows 95, the chances are the driver you need will be built-in. If you're installing Windows 3.1 or DOS, you'll need to get hold of PC drivers for any devices plugged into your Mac.

That's part of the problem. The other part is the differences in wiring between Mac ports and PC ports. For example, the PC driver for your modem may be designed for the wiring layout of the PC modem port. The same goes for other peripherals, and there are no hard and fast rules about which will work and which won't.

You'll be able to use your Mac printer from the PC side, but only if it's a PostScript printer – in other words, only if it used a printing language common to both the PC and Mac.

If you want to connect and use peripherals from the PC side, the Orange card will make it much easier because it



The graphics redraw speed should be instant, and fill the size of the window, but that's often not the case with *SoftWindows*.

provides its own PC ports.

Video

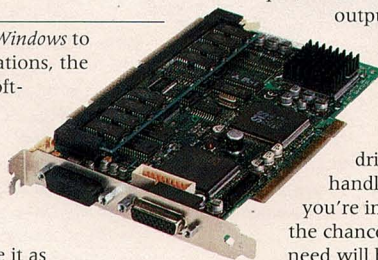
The way the PC cards deal with video output is excellent, because of their built-in VGA support. *SoftWindows*, however, has to emulate all of the graphical functions, and this is where it loses out. The PC cards also have the advantage when you're using some older DOS-based programs which work directly with the graphics card. These are very hard to emulate using software.

Overall, this means that a lot more games and multimedia software will both run, and be smoother in operation, when using a hardware solution. *SoftWindows* can leave you with slower redraw and a reduction in the size of the available window – if the program will run.

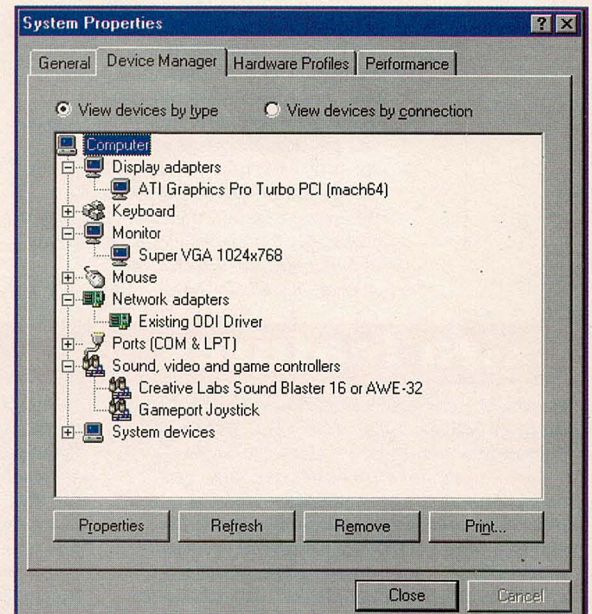
In the Apple cards, the video display is handled by the integrated ATI Mach 64 VGA chip sets, with 1Mb of video RAM. The Pentium card has space for you to fit an additional 1Mb of VRAM, enabling you to boost it up to 2Mb. The video

Joystick

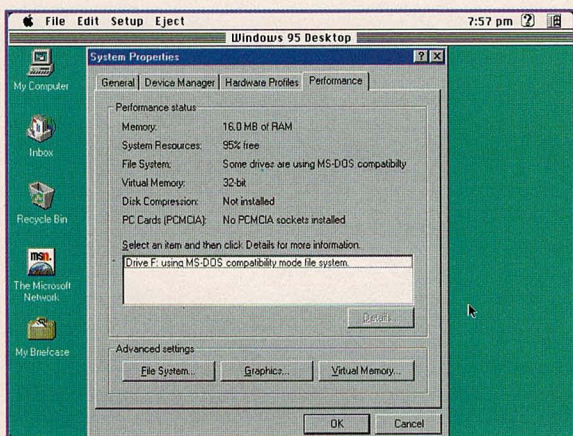
Beware: the PC joystick port looks exactly like the Mac monitor port. If you plug your joystick into the wrong slot, you could damage it with too much power.



The Apple cards don't come with enough RAM to run a modern OS.



This Windows Control Panel shows the devices the PC is using. It doesn't show that the devices are actually hooked up to a Mac.



This picture hasn't been cropped – the screen resolution simply means there's not enough room for the Windows menu bar.

resolutions these cards can achieve will also depend on the monitor you attach. For the best video display, a multi-frequency monitor is advisable.

Both the Apple cards can be run with one or two monitors. If you have a dual-screen set-up, then your Mac display will connect as usual. If you're using an additional screen, plug it into the loop-through cable supplied with the card, and both the Mac and PC modes will be displayed simultaneously. To use both Mac and PC on the same monitor, the video display will have to be looped into your Macintosh display via an external loop-through cable (supplied). When you switch between Mac and PC sessions, the screen display switches automatically.

The Orange card's video display is handled by the integrated S3 Trio 64 VGA chip set, fitted with 1Mb VRAM (expandable to 2Mb). Sound reproduction comes from the Ensoniq SoundBlaster-compatible chip set.

The monitor

To get the best out of a PC card, you'll have to use a multi-scan monitor, since the PC video will switch frequencies as it changes resolution. A multi-scan monitor will "remember" these different frequencies and, after you've set it once, will position the image on the screen correctly each time you switch from the Mac to the PC. If you have a fixed-frequency monitor, however, you may be able to get the higher SVGA resolutions of 800 x 600 and 1,028 x 768.

Using *SoftWindows*, this is not really a

problem, since all the video is emulated on your Mac. However, you can run into problems where the resolution of your Mac monitor is the same as or less than the PC.

You should remember that all the video connectors on the PC cards' loop-through cable are the standard Macintosh 15-pin D-type connectors. If you are attaching a PC monitor you will need a PC-to-Mac video converter.

The serial port

The use of PC serial ports is also seriously limited by Macintosh hardware. The Mac is based on the RS422 standard whereas the PC is based on RS232. PC serial ports have more control lines, which means that any peripheral dependent on hardware flow control (a modem, for example) could potentially suffer compatibility problems – it all depends how the driver's comms software communicates with the hardware on the serial port.

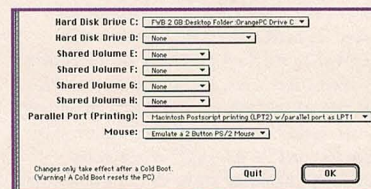
If, however, you're using software flow control (used by some printers and terminals), then this shouldn't be a problem. This whole situation is not a problem for the Orange card, since it has two fast PC serial ports (16550 UART) built in.

The parallel port

Only the Orange card has support for a parallel port (bi-directional ECP/SPP). This means you can plug any PC printer in via a parallel cable, and print from your PC card, though if you're using a PC-based printer, you won't be able to redirect data when you're in the Mac. All the products we looked at – hardware and software – supported printer redirection to a Macintosh printer while in PC mode.

The games port

If you use *SoftWindows*, you'll get no games port support, because of the



Device options for the Orange card make use of its built-in parallel and serial ports.

hardware limitations of your Mac.

The PC cards have overcome this problem by including the necessary port as part of their hardware.

The Apple cards have a joystick port which supports two joysticks and MIDI in/out, although if you want to make use of that second joystick or MIDI connection, you will need to invest in some adaptor cables. This is actually the standard arrangement in the PC world, so cables will be easy to obtain.

The Orange card, too, is fitted with a joystick port, but you will have to use a PC-compatible joystick or game controller with all of these cards. This should hardly present a problem as PC joysticks are cheaper than their Mac equivalents.

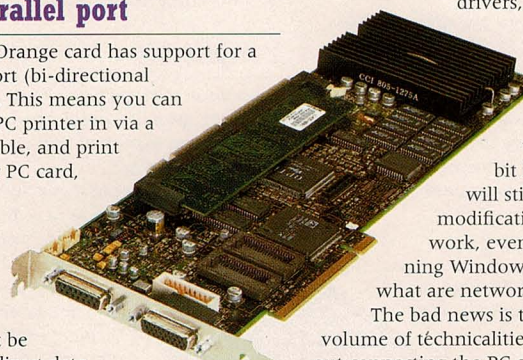
The network card

First the good news. All products provided support for ODI and NDIS drivers, enabling you to connect to most popular networks. These ODI or NDIS drivers are old 16-bit DOS drivers, and will still need some modifications before they'll work, even if you are running Windows 95 – but hey, what are network supervisors for? The bad news is that the sheer volume of technicalities is likely to rule out connecting the PC side of your Mac to a network. For a start, you won't be able to get the PC side to talk to a LocalTalk network – it will have to be Ethernet. And then, assuming you do manage to get the PC side talking to the network via the Mac, it's going to be very slow because it has to share networking protocols with your Mac.

If you're really serious about networking a PC emulator in your Mac (as opposed to a separate stand-alone PC), you'll need to enlist some serious professional help.

The SCSI card

SCSI cards on the PC are pretty rare, and are typically only seen in very powerful machines. However, since both *SoftWindows* and the Orange card come with an ASPI SCSI driver (see the Jargon Busters box), you can always add a SyQuest or optical drive and access it from your PC – you could even have a formatted PC SCSI disk, although this can't be made bootable.



This card may be from Apple, but it still won't work across LocalTalk.

Extra features

You might think you'd be just as well off buying a PC to go with your Mac (fair point), but having the two in one case does offer advantages:

Networking: thanks to current network connections, some of the products allow simultaneous IPX or IP network connection in both the Mac and PC, although this does depend on which Macintosh you are using and does require a minimum of System 7.5.3 (because you'll need Open Transport).

Clipboard: you can transfer information from the

PC to the Mac, or from the Mac to the PC, via the Clipboard and it works exactly the same way as the clipboard does in the Mac or PC alone. So you could Cut some item from the PC, flip over to the Mac and Paste it in. This may not work with every combination of programs you have, though: one may not translate the other's information. **Shared Folder:** you can create a folder on your Macintosh which can also be accessed when you flip into your PC. This enables you to move information between the two easily.



Compatibility

We tested all the solutions using two very different types of software: the programs in Microsoft's *Office* suite and two games which hit the PC hardware directly. If there were incompatibilities, the games would nail them.

For a start, all the products ran Windows 3.1 and Windows 95 perfectly. Generally, if Windows will run, so will any applications which run under it. The *Office* applications worked flawlessly, too – any of these products are likely to be fine for “serious” PC applications.

However, comms software might prove to be a problem – especially using *SoftWindows* – since the speed of the PC emulation does fluctuate and this could cause problems in timing-specific soft-

ware. The Orange card was the only one to provide PC serial ports, so you won't get the same problems if you have one of these cards.

Our test games worked fine on the PC cards. The main problems you'll see include jerky gameplay while the hard disk accesses (*Duke Nukem 3D*), and the need to tweak your **Sound** set-up to make it work with all games (*Quake*).

SoftWindows, however, isn't quite as obliging. Our results suggest that games will either not work or will be so slow that they are unusable. Also, since there is no SoundBlaster emulation in DOS, you won't get any sound – not a good solution all told.

All the PC diagnostic programs we used seemed to work fine on both the hardware and software PC emulators.

Problems

In the world of PC, just as with Macs (probably more so, to be honest), there are always problems with compatibility – there may be two pieces of hardware that don't work together, or a piece of software that doesn't work with a piece of hardware. There are different

reasons for these incompatibilities: the software companies blame the hardware companies, and vice versa. Meanwhile, you're left with useless equipment or a game that refuses to run on your brand-new £2,000 system.

Generally speaking, all the products performed very well, but you'll need to make sure all the software is correctly installed. Most of them provide a text file listing known incompatibilities with specific hardware and software. This is normally too late, of course, because you don't get to read it until you've bought the product...

SoftWindows suffered from the most incompatibilities, one of the most alarming being Floating Point maths errors. This is not the fault of *SoftWindows*, however, but an inaccuracy that stems from the differences between the Mac and the PC hardware. To get round this, *SoftWindows* does provide an option to disable the maths co-processor.

SoftWindows also suffered in some of the older video modes and couldn't make up for the Mac's lack of relevant hardware – for example, the lack of ports means it couldn't support a joystick.

With the honourable exception of the OrangePC card, none of the products we tested, hardware or software, offered any form of parallel port, so any software that has a copy-protection dongle (it's common with music programs) will not work – there's nowhere to plug it in. You may be able to get round this problem by using dongles that operate from the serial port. These won't work with *SoftWindows* because of timing restrictions, but they may operate with the PC cards. However, since the serial ports on the Mac and PC are different, you should check each specific product with your supplier.

NTrigue

Insignia Solutions now has a product named *NTrigue*, which runs software on a Windows NT server, but displays the picture on a Mac monitor.



It's much more difficult to get CD-quality stereo sound working on a PC than it is on a Mac – be prepared for some tweaking.

PRICE SW3, £351; SW 95, £410	ON SALE Now	CONTACT Insignia Solutions on 0800 667706	WEB SITE http://www.insignia.com/
MAC PowerMac only	POWERMAC	Processor: any • RAM: 16Mb	REQUIRES System: 7.1 • HD space: SW 3, 40Mb; SW 95, 140Mb

SoftWindows 3 and SoftWindows 95

Insignia's *SoftWindows 3* and *SoftWindows 95* take a software-based approach to giving your Mac Windows. The two packages are emulators that fool your Mac into working like a PC. Each package comes with its own version of Windows – 3.1 or the later 95.

Both *SoftWindows* packages are easy to use – easier, perhaps, than actually using a PC. All you need to do is start the emulator program, and the OS you're using will load automatically. You've effectively got a Mac and a PC on the screen at the same time, which is very convenient. *SoftWindows* also supports the

most common Windows standards like SoundBlaster sound compatibility. That's the good news.

The bad news is the emulator's speed. Insignia claims *SoftWindows* can run at 486 speed, but our tests found the speed to be much slower, unless you're lucky enough to own a particularly fast (and expensive) PowerMac. And most PC users think the 486 is out-of-date now in any case.

SoftWindows is a fine out-of-the-box solution for occasional PC work, but try playing games or doing graphics work, for example, and you'll be frustrated.

SoftWindows 3

One for the fastest PowerMacs only: the emulator is slow and the operating system is showing its age badly.

MF rating

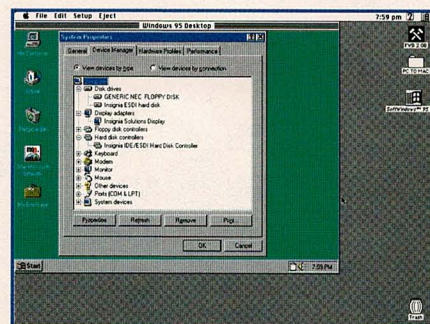
60%

SoftWindows 95

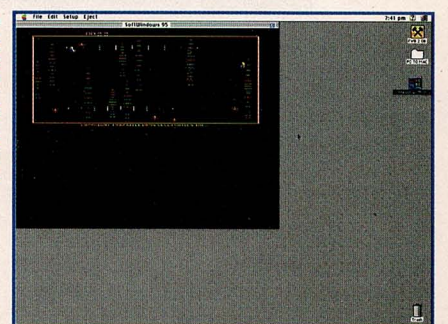
This software is much easier to start up than any of the cards, but you'll be so disappointed by the speed.

MF rating

65%



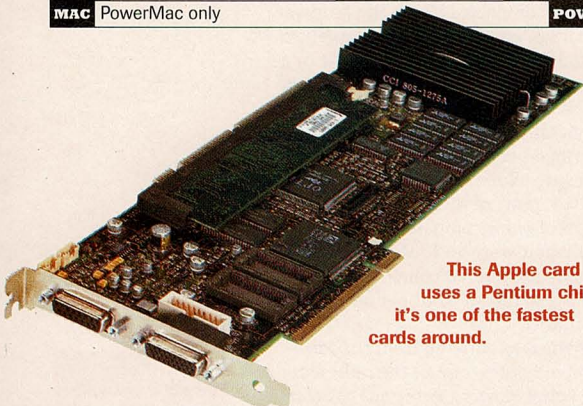
Unless you have a very fast Mac and plenty of RAM, you'll find the emulator a frustrating experience.



The *SoftWindows* packages enable you to run either Windows 3.1 or Windows 95 on a Mac without any extra hardware.



PRICE 586, £591; Pentium, £751	ON SALE Now	CONTACT Apple Computer on 0800 127753	WEB SITE http://www.apple.com/
MAC PowerMac only		POWERMAC Any PCI PowerMac	REQUIRES System: 75



This Apple card uses a Pentium chip, so it's one of the fastest cards around.

Apple, Orange and Reply each offer hardware PC cards—effectively a PC computer that slots into your Mac. The card simply shares your Mac's hard drive, CD-ROM and monitor.

Apple offers just two types of card, both of which are only for PCI-equipped PowerMacs from the 7200 to the 9500. There's a 12-inch card using an Intel Pentium running at 100MHz, while the 7-inch card is based on the Cyrix 100MHz 586 chip, which has a similar

Apple PC Compatibility Card

performance to an Intel 75MHz Pentium.

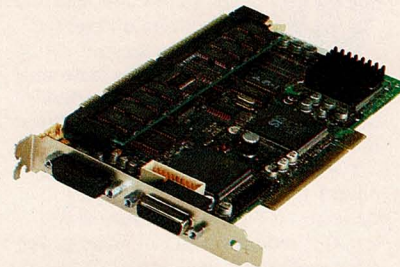
Like the other cards, Apple's pair includes MS-DOS 6.22, the most basic of Microsoft's operating systems and one that's pretty useless for doing any work with. You'll have to be prepared to spend upwards of £80 to buy either Windows 3.1 or Windows 95, depending on your preference.

You won't have much difficulty fitting the card: installing the operating system software is much more problematic, especially if you're not used to the problems PCs can throw up. This is hardly Apple's fault—it didn't design *this* OS, after all. The card comes with just 8Mb of RAM—you'll need at least eight more to run Windows 95.

Apple Pentium 100

The Intel cards were the best performers on our tests, making this Apple card an excellent all-round purchase.

MF rating 81%



The Apple 586 isn't a brilliant performer, but it's easily the cheapest card we found.

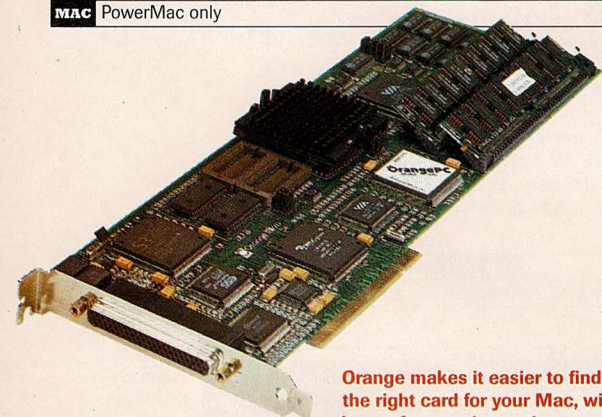
The Pentium is clearly the superior chip of the two. Switching between Mac and PC is a simple matter of hitting a basic key combination.

Apple 586/100

Not the fastest card on test, but then it costs less than any of the others. A decent budget buy.

MF rating 75%

PRICE £1,295	ON SALE Now	CONTACT Principal on 01756 704040	WEB SITE http://www.orangemicro.com/
MAC PowerMac only		POWERMAC Any PCI PowerMac	REQUIRES System: 75



Orange makes it easier to find the right card for your Mac, with plenty of expansion options.

Orange Micro OrangePC

Orange offers a wide range of cards (see table) with a choice of three processors. You can get cards for either a PCI slot or the older NuBus slot found in Quadras, Centris and the like.

While Apple and Reply's cards are essentially the same, Orange has taken a different tack. As well as different processors, this card is the only one to offer built-in serial and parallel ports for connecting PC-compatible printers. You have to improvise using Mac equipment or unusual types of connector with the

other cards.

This attention to detail is let down by the card's speed, at least with the Cyrix 5x85/120 we tested (there's no Pentium option). OrangePC is worth considering if the ports are vital to your work.

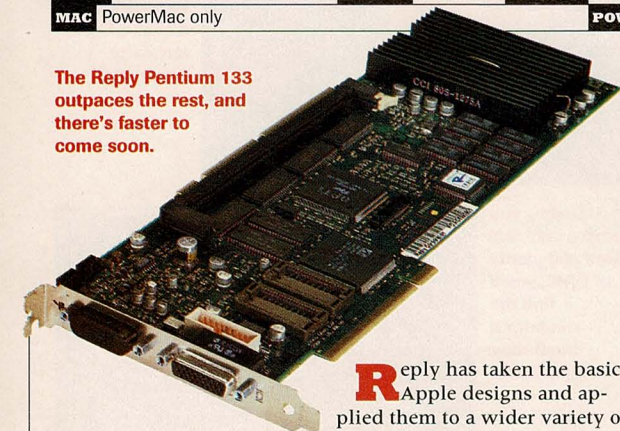
OrangePC 586/120

It's the only card to include proper PC serial and parallel ports, but it isn't a great speed demon and costs a lot of money.

MF rating 71%

PRICE 586, £821; Pentium, £1,056	ON SALE Now	CONTACT Vernon Computer Dist on 0171 720 7000	WEB SITE http://www.reply.com/
MAC PowerMac only		POWERMAC Any PCI PowerMac	REQUIRES System: 75

The Reply Pentium 133 outpaces the rest, and there's faster to come soon.



Replay has taken the basic Apple designs and applied them to a wider variety of Macs (see table). We tested a 7-inch card using a Cyrix 133MHz 586 chip and a 12-inch card using an Intel 133MHz Pentium.

Reply DOS on Mac

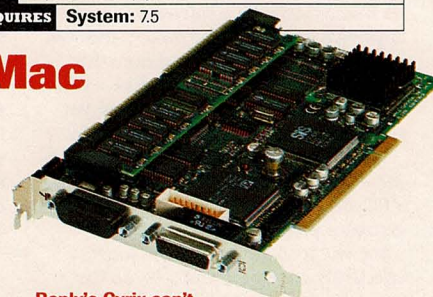
As with Apple's card, you'll need to buy your own OS and really should invest in more RAM as well. The Reply cards also offer the ability to switch between Mac and PC easily.

Reply has a clear lead in speed, with the fastest cards we saw—and it will be the first with 200MHz cards in January. The prices will stay the same as the 133MHz cards shown here.

Reply Pentium 133

The most powerful card we tested—an excellent performer, but you'll still to splash out on extra RAM to handle Windows 95.

MF rating 83%



Reply's Cyrix can't match the pace of its companion but is still good value.

Reply 586/133

Like Apple's Cyrix card, it pales beside its Pentium companion, but still good value if you want two machines in one case.

MF rating 80%



The verdict

There were nice features on all the products, but the neatest solution must come from either Apple or Reply, especially if you're a 7200 owner – the internal video and audio cables mean there are no additional cables dangling out of the back. These cards also benefit from having a SoundBlaster chip and a good VGA video chip set.

As for which CPU you should go for: well, you have to go for the fastest you can afford. A Pentium 100MHz or Cyrix 133MHz should be the minimum if you intend running Windows 95.

Reply has the added advantage that there more cards to choose from.

The main problem with *SoftWindows* is that it is incredibly slow compared to the other products – even when we ran it on a 7500/100. Also, the maximum colour depth that it supports is only 256.

Its main advantage, however, is its ease of use – the Windows operating system comes pre-configured, for a start. *SoftWindows* also has a scripting language

that will enable you to create scripts that you can use to switch between Mac and PC and open Windows.

Which one?

Your choice of PC compatibility product depends on what you need it to do.

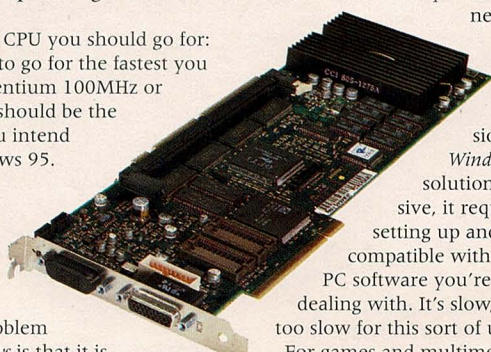
If you have a Mac and need to work on documents from PC owners only occasionally, *Soft-*

Windows is the best solution. It's inexpensive, it requires minimal

setting up and it's perfectly compatible with the business PC software you're likely to be dealing with. It's slow, yes, but not too slow for this sort of use.

For games and multimedia, though, forget *SoftWindows*. You need the performance of a proper PC card; the Apple and Reply cards offer the best combination of price and performance, and they handle PC CD-ROMs pretty reliably too.

But the lack of PC ports is a big limitation in a networked office environment. If you want proper connectivity with other users and peripherals, you



Reply's Pentium range leads the field, both hardware and software.

Our tests

The test machine we used was a 7200/90 running System 7.5.3, with a 2Gb hard disk and 16Mb of its own RAM. We also equipped the PC Compatibility cards with 16Mb – a more sensible amount than the 8Mb typically supplied when you buy one. For *SoftWindows 95* and *SoftWindows 3* we instead used 40Mb in the Mac, of which 16Mb was allocated to the PC emulator. Insignia suggest you can use the program with less; we don't agree. We also tested *SoftWindows* on a 7500/100.

Although most of the PC Compatibility cards supplied MS-DOS 6.22 only, we tested them using Windows 95 as this enabled us to get a better feel for the products. We ran a variety of Windows software like *Internet Explorer*, *Microsoft Office 95* and *Encarta 96*. To try out MS-DOS itself, we ran the top games *Quake* and *Duke Nukem 3D* to assess the card and software's speed and sound capabilities, along with a variety of speed-checking utilities.

need the more expensive Orange card and its dedicated PC-specific serial and parallel ports.

Or should you buy a PC?

If you really must have total PC compatibility, buy a PC. We never thought we'd recommend anyone to buy a PC, but in this context it's the most reliable solution. All of the products we've reviewed here provide PC compatibility up to a point, but they're either tricky to set up (in the case of the cards) or hopelessly inadequate for games and multimedia (*SoftWindows*). They're certainly handy in certain situations, but none of them provides a 100% perfect, plug-in-and-go solution – not by a long chalk.

MF

7200 video

The Apple and Reply cards include an internal video connector only for the 7200, which enables both the Mac and PC video to be displayed on the same monitor, without the need for any external cables.

The complete PC card range

Apple PC Compatibility Card

Contact: Apple Computer on 0800 127753

Model	Exp slot	RAM fitted:	0Mb	8Mb	16Mb	32Mb	Max RAM	OS inc
Cyrix 586/100	PCI 7-inch	-	-	£591	-	-	64Mb	DOS
Intel Pentium 100	PCI 12-inch	-	-	£751	-	-	72Mb	DOS

Orange Micro OrangePC

Contact: Principal Distribution on 01756 704040

Model	Exp slot	RAM fitted:	0Mb	8Mb	16Mb	32Mb	Max RAM	OS inc
320 AMD 486 DX2/80	NuBus	-	-	£913	£1,160	£1,774	32Mb	DOS
320 Cyrix 586/120	NuBus	-	-	£1,049	£1,295	£1,911	32Mb	DOS
340 AMD DX2/80	NuBus	-	-	£1,234	£1,479	£2,095	64Mb	DOS
340 Cyrix 586/120	NuBus	-	-	£1,370	£1,616	£2,230	64Mb	DOS
420 AMD 486 DX2/80	PCI 12-inch	-	-	£913	£1,160	£1,774	32Mb	DOS
420 Cyrix 586/120	PCI 12-inch	-	-	£1,049	£1,295	£1,911	32Mb	DOS
440 AMD DX2/80	PCI 12-inch	-	-	£1,234	£1,479	£2,095	64Mb	DOS
440 Cyrix 586/120	PCI 12-inch	-	-	£1,370	£1,616	£2,230	64Mb	DOS

Reply DOS on Mac

Contact: Vernon Computer Distribution on 0171 720 7000

Model	Exp slot	RAM Fitted:	0Mb	8Mb	16Mb	32Mb	Max RAM	OS inc
486 DX2/66	Centris/Quadra 610, 650	£422	-	-	-	-	32Mb	-
486DX2/66	Quadra 700,800, 900, 950	£422	-	-	-	-	32Mb	-
486 DX2/66	PowerMac 6100	£422	-	-	-	-	32Mb	-
486 DX4/100	PowerMac 6100	£516	-	-	-	-	32Mb	-
586/100	PowerMac 6100	£598	-	-	-	-	64Mb	-
586/133	PowerMac 7100, 8100	£598	-	-	-	-	64Mb	-
586/200 (from Jan 97)	Performa 5200, 5300, 6200 etc	-	-	£645	£704	£774	64Mb	DOS
586/200 (from Jan 97)	PCI 7-inch	-	-	£821	-	-	64Mb	DOS
Pentium 200 (from Jan 97)	PCI 12-inch	-	-	£1,056	-	-	72Mb	DOS

All prices include VAT. Contact suppliers for RAM and operating system prices



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WEB SITE <http://www.formac.com/>

MAC Processor: Any • RAM: <400K POWERMAC Processor: Any • RAM: <400K REQUIRES System: 7.0 • HD space: <1Mb

Formac ProChange 48 CD drive

Sick of swapping the *Kai's Power Photos* CD for James Last? You want a CD drive that does it for you – such as Formac's latest CD autochanger.



Compact disc autochanger drives have been around for quite a while. Walk into any hi-fi shop, for example, and you'll see half a dozen of 'em begging to be played with. CD-ROM autochangers are still a bit of a novelty, though, because there aren't many around. Those which do exist tend to be juke-box affairs costing wads of cash and requiring as much floor space as a small filing cabinet.

Formac's ProChange 48 CD-ROM drive is based on an eight-speed four-CD drive mechanism made by Nakamichi, which is better known for high-quality audio tape decks. The drive accepts four CDs at a time and doesn't use caddies – you simply insert the CD face up. The drive then hauls the disc in the last quarter inch and puts it into the queue. You can't access more than one CD at once, but you can have up to four on the Desktop. When you double-click on any particular CD, the drive shuffles it under the read head and off you go. Sadly, you cannot play an audio CD and access a CD-ROM disc at the same time – you still need two CD drives for that.

The front of the drive sports a headphone socket, volume control, and four buttons used for selecting available "slots". Since only one CD can be under the read head at a time, the drive has to shuffle the disc into a queue so that another can be loaded. The buttons double as CD ejects. LEDs above the buttons light up to

tell you if a disc is in position, and double as disc access lights.

Around the back is the usual CD-drive paraphernalia, including two 50-pin SCSI ID selector switch, power on/off switch, and left and right audio out ports. These are a useful addition and mean you can

hook the drive up to your hi-fi if you wish. However, there isn't a play button, so it must still be connected to your Mac.

With the drive you get a 25-to-50-pin SCSI connection cable, power lead, a one-year guarantee, manual and driver software, which consists of an Extension for your System Folder and two desk accessories installed in your Apple Menu.

Nakamichi Audio Remote enables you to compile a list of your favourite audio tracks across all four CDs and have them play in turn – the drive swaps between discs automatically.

One problem we experienced was an off-putting flicker in *Audio Remote's* window when you're trying to compile your list of tracks. The program also seems to list data CD-ROMs along with audio CDs, which tends to confuse matters and could conceivably result in your Mac's speakers emitting an unpleasant high-pitched data screech, although we didn't get as far as this. In fact, we couldn't even get it to play audio CDs, because the Mac audio system doesn't support autochanger CD drives. If you want music, you have to connect the drive's audio out ports to the microphone port or a hi-fi system. You'll need a cable from your local hi-fi dealer to do this.

Nakamichi CD Controller is a small program which reports the queue status and tells you which CD is in each location. It also has options to mount or unmount a CD and enables you to set the size of the directory cache. This stores the location of files on each CD, enabling you to switch between discs more quickly. Switching can take 20 seconds or longer if you have four CDs in the drive, so it is an essential feature.

If you're running a program, you can be left waiting for over a minute while the drive sorts out which disc it was using. There's also a problem with Open and Save dialogue boxes. When you click

It might look like a plain CD drive to you, but under the hood are a dozen pixies ready to swap discs at a moment's notice. Ah ha ha, yeah...

on the Desktop button, there is a lengthy wait while the drive polls each CD to see if there are any files in its Desktop folder.

The eight-speed mechanism is quick for copying files and opening applications from a single disc, but the autoloader mechanism slows things down if you're working with more than one – it takes longer to load a second disc than it would to load a single disc into a regular drive. With four CDs in the drive, things slow to a crawl.

The documentation is pretty good and covers installation, care and maintenance and troubleshooting. It's not quite Dickens, but it's a reasonable read and pretty understandable.

Overall, this is an interesting piece of kit. It will find favour with those who regularly access information on multiple CDs and the die-hard technology junkie. In terms of day-to-day use, though, the drive can seem criminally lethargic as it swaps between discs, and you'll probably end up only using one at a time anyway. This is not so

much a fault of the drive as of the technology as a whole, though.

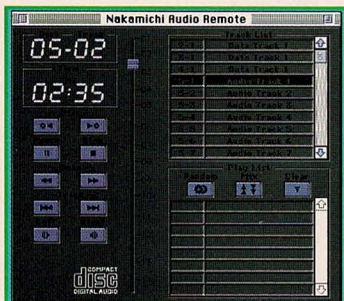
LINDSAY BRUCE

ProChange 48 CD drive

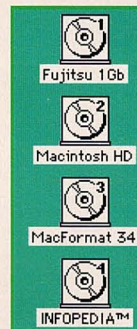
A nice toy, and cheap for an autochanger, but when you're using four CDs, it slows you down dramatically – it's quicker and cheaper to use a regular CD-ROM drive.

Features	78%
Ease of use	74%
Documentation	80%
Value for money	71%

MF rating 75%



The *Audio Remote* software is pretty basic, but unlike Apple's *CD Audio Player*, it enables you to compose playlists from different CDs.



Wow! Four CDs on the Desktop at once?


PRICE £351 (plus £53 for PowerBook connection cable)

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CONTACT Sony on 0181 760 0500

WEB SITE <http://www.sony-cp.com/>
REQUIRES System: 7.0 • Extras: 3.5-inch floppy disk drive (for installation software)

Sony CD-ROM Discman



Small is beautiful? Well, it is where portable technology is concerned. If you're aching to run CD-ROMs while you're on the move, then Sony may have the answer to your prayers...

It seems to be a law of the modern world that if a piece of hardware wants to be recommended, it must be small enough to fit in your pocket. Witness the advent of the Walkman, a direct descendant of the stereogram; and, as featured in MACFORMAT 44, flat screen monitors as opposed to those bulky models which currently fill most of your desk space.

Following this trend, Sony has now produced the CD-ROM Discman, enabling you to use your CD-ROMs while you're on the move.

The new CD-ROM Discman is a fantastically light, compact little CD drive, dressed in PowerBook grey. It comes equipped with a tiny (and rather cute) PCMCIA Type II PC Card, which provides a SCSI connection so you can hook the Discman to your PowerBook, and it has massive potential to be both practical and time-saving. Furthermore, PowerPosers can rest assured that it looks great when you're travelling on the train.

This ten-ounce unit is cleanly designed, with buttons for audio CD operation mounted sleekly on the front. As an audio player it's under-featured, with "play", "stop", and "track advance" buttons being your entire range of options – apart from the volume and headphone controls that you'll find on the side. In fact, to the untrained eye, this unit looks pretty much like any other Discman – the only hints you'll get that this is more than a normal pocket system are the "mode" button on the front panel (which

you'll hardly ever need to use), the titchy SCSI port on the rear of the unit, and two dip switches situated underneath. These latter two binary switches are your entire range of options as to how the drive behaves – you can choose whether it's SCSI ID 3 or SCSI ID 5, and whether the drive itself is self-terminating or not.

On the road again

So, you've got your new CD-ROM Discman, and have connected it up to your PowerBook – but how does it run? Well, like the variety of power options available with the PowerBook, the Discman is spoilt for choice as to exactly where it sucks that all-important current from. You can plug it into the wall using a supplied AC adaptor, clip four AA-size batteries into the snap-on battery holder, or use a rechargeable lithium-ion battery, all of which are supplied with the Discman. The only snag to the battery options, though, is that they only give you two hours of CD-ROM life. While this seems a little short, the reasons why are understandable – first off, it's a quad-speed drive, and secondly, CD-ROM-heads have to spend a lot of time seeking, moving back and forth and stopping – which tends to burn up a lot of energy. The upshot of all this is that you'd probably be better off plugging it into a wall for the most part.

But of course, this is the portable market, so if you do need to travel with your CD-ROM drive, then it must be able

to run smoothly – it's no good if you spend your entire two hours of valuable battery life hoping for a smooth part of your journey so that the Discman will work. We tested the CD-ROM Discman in the back of a particularly clapped-out car, driving off-road with virtually no suspension – and happily, the Sony machine passed the test with flying colours. It played smoothly and cleanly, 34Mb of movie surging its way down the wire without a single hitch.

So, are there any problems with this neat little machine? Well, the documentation that accompanies the Discman is fairly standard, and mainly aimed at the PC market. More importantly, the cables included only connect up to a PC – as a Mac owner, you'll have to shell out an extra £53 on top of the asking price for a Mac connection cable and driver software. Cheeky.

But in short, this is very useful – it's not only compact, robust and incredibly light, but it also runs smoothly and is extremely fast. **SIMON FORRESTER**

Sony CD-ROM Discman

A fast, small and extremely smooth-running piece of machinery – ideal if you need to work (or want to play) on the move.

Features	75%
Ease of use	90%
Documentation	80%
Value for money	70%

MF rating 85%

Call a Terminator

SCSI (Small Computer Systems Interface, pronounced "scuzzy") is the system your Mac uses to connect to devices like hard disks and CD drives. SCSI relies on current passing along the chain of devices, so the chain needs to be "terminated" at both ends. Your Mac is terminated internally, and some other devices are as well, but you often need to add a terminator (like a SCSI plug with no cable).

CD formats

The Discman can handle more than just CD-ROMs and music CDs. It can recognise CD Plus, the curious hybrid of CD-ROM and audio, and the PhotoCD format often used to store images (both single- and multi-session varieties).



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Performance Direct 4Gb hard drive

There's never enough storage space on your Mac, or so it seems. Bearing this in mind, we put Performance Direct's new 4Gb drive through its paces. How does it do?



Store wars

We took a closer look at storage solutions in MACFORMAT 43, where we covered hard drives, magneto-optical drives and removable cartridge drives. If you missed this, turn to page 144 for details of how to get hold of your copy.

OEM?

The original equipment manufacturer (or OEM) for this drive is IBM. Performance Direct takes the IBM drive, puts it in a casing and supplies driver software and power cables with it too.

There's an unclassified law in computing: your data expands to fill the space available, no matter how big that

space is. Now that even entry-level Macs come with 1Gb or bigger drives, these days you should have more storage space than ever. On the other hand, you can now do more with your Mac than ever before – but most of this takes up large amounts of disk space. Performance Direct's 4Gb drive gives you the luxury of not having to worry about storage space. Going from a 1Gb drive to a 4Gb drive is rather like moving from a semi-detached house into an aircraft hangar.

The drive is housed in a hefty grey steel casing of doorstep proportions (55mm x 245mm x 265mm). On the back are the usual twin 50-pin SCSI connectors for hooking the drive up to your Mac, power on/off switch and SCSI ID selector. The front is unremarkable, with LEDs indicating power and drive access.

With the drive you get CharisMac's excellent *Anubis* driver and formatting software, a SCSI (Small Computer Systems Interface) connection cable, power lead and manual. The latter is remarkably thin, but instead of using this, you can refer to the *Anubis* manual, which has very detailed setup and troubleshooting sections, ideal for the uninitiated. Formatting the drive is very easy with this software, but since a Mac running

under System 7 can't actually deal with volumes of more than 4,096Mb, we partitioned the drive into two volumes that mounted separately on the Desktop – one 4,096Mb and one 230Mb (the drive is actually 200Mb or so larger than its name suggests). You can of course set the partitions to any proportion you like, as long as neither exceeds 4,096Mb.

The drive powers up gradually – first the fan whirs into life, then the drive kicks in, taking on an increasingly urgent note until it passes beyond the reach of a dog's hearing. You will get used to the noise quite quickly though, and it is not unusual – most large drives are noisy because of the high speeds and the additional platters they contain.

We were expecting the drive to be pretty fast. We ran two tests on a Umax Pulsar using a *MacBench 3.0* disk mix (a series of timed read and write tests) and publishing disk mix. The former is a simulation of everyday use, while the latter is geared towards the really large files that you're more likely to find in most types of publishing. As a real world

test, we timed how long it took to duplicate a 22Mb file. The results were compared with a standard 1Gb Fujitsu internal hard drive. As it happens, both drives completed the test in just over 13 seconds. Pretty speedy.

Overall, this is a damn good drive. It stores a hell of a lot of files, it's very fast, comes in a very solid casing and has excellent driver software. At £760, though, it's costly for home use – two separate 2Gb drives would cost no more, and one would be plenty for everyday uses. But if you're interested in digital video, multimedia, graphic design or publishing, do consider this drive.

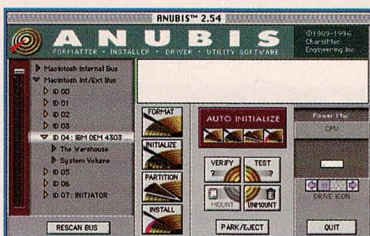
LINDSAY BRUCE

Performance Direct 4Gb hard drive

It's big, fast and has some of the best driver software we've seen – but it is noisy.

Features	82%
Ease of use	90%
Documentation	75%
Value for money	73%

MF rating 78%



The *Anubis* driver software is very easy to use and has an interface that puts you in mind of Kai Krause meets Industrial Design. It has a solid yet friendly feel to it.

MacBench results

We've shown our test results as percentages compared against a PowerMac 6100/60, which is *MacBench*'s benchmark system. The higher the percentage, the faster the drive performed. The Fujitsu drive is our standard test drive and its results are given in preference to the Pulsar's own hard disk for consistency.

Disk Mix

PowerMac 6100	100%
Fujitsu 1Gb	144%
Perf Direct 4Gb	204%

Publishing Disk Mix

PowerMac 6100	100%
Fujitsu 1Gb	139%
Perf Direct 4Gb	154%

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MACcelerate 180

When released, the PCI PowerMacs came with the promise of full upgradability via the processor daughterboard. We take a look at the first of these daughterboard accelerator cards.



Go faster...

For more information about upgrading and expanding all types of Mac, you need MACFORMAT 37. If you missed this and want to know more, turn to page 142.

Warranty-wise

We contacted Apple to find out what happens to your warranty if you install a non-Apple component in your Mac. Apple told us that if you suffer a failure, your warranty will be unaffected, so long as that failure can't be traced back to the new component.

If you are the proud owner of a PCI PowerMac, you probably bought it secure in the knowledge that your investment would be protected. This group are the first Macs to be equipped with removable processor daughterboards that you can replace as faster processors are released. (This option doesn't apply to the 7200 or 8200, though.)

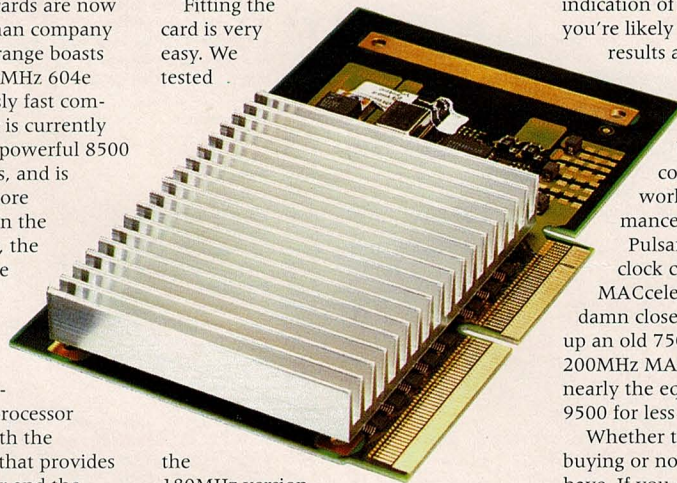
Three of these upgrade cards are now available, courtesy of German company Phase 5; the MACcelerate range boasts 150MHz, 180MHz and 200MHz 604e processors for some seriously fast computing. The 604e processor is currently only available in the more powerful 8500 and 9500 series PowerMacs, and is capable of processing far more instructions per second than the 604 you'll find in the 7600, the 601 in the 7500 or the 603e that's part of the current Performa range.

The motherboard design for the PCI PowerMacs has a daughterboard slot into which the processor card fits. The card holds both the processor and a clock chip that provides the timing for the processor and the motherboard. Upgrading is simply a case of removing the old daughterboard and plugging a faster one into the slot. This idea provides an inexpensive upgrade path for all PCI PowerMacs equipped with daughterboards.

The MACcelerate card replaces the existing Apple daughterboard in your Mac, and differs from it in several ways. First, the MACcelerate card runs at 3.3 volts compared to the Apple card's 5 volts. This reduces the amount of heat the processor produces and hence the card should have a longer lifespan than comparable Apple cards. Neat feature number two is a phase-locked loop clock

chip which provides tighter control over the exact speed the whole Mac runs at. Small variations in temperature or operating environment (especially electrostatic interference) can cause the motherboard clock speed to vary. The MACcelerate locks the clock frequency to a specific value at start-up and then compensates for any variation during operation. The result is fewer crashes.

Fitting the card is very easy. We tested



the 180MHz version in a 7500/100. All you do is simply unplug the Mac, take the case off, pull out the old processor board, and plug the new one in its place. Put the case back on and start up. It's that easy. Of course, you should remember to use anti-static protection in the form of a wrist strap. It's also worth remembering that any work you undertake on your own can put your warranty in jeopardy. If you are in the least bit insecure about what you're doing, get an Apple-authorized engineer to do it for you.

The speed gains you'll achieve are instant and across the board. Everything about your Mac will go faster, including

disk access, graphics, floating point calculations, and, of course, your applications.

We tested the new-improved 7500 using MacBench 3.0 and an 11Mb Photoshop file for real-world tests. We gave Photoshop 32Mb of memory and timed how long a four-pixel Gaussian Blur and a four-pixel, 100% Unsharp Mask took, both with and without the MACcelerate card. These tests give an indication of the kind of speed increase you're likely to get in day-to-day use; the results are in the table below.

We also compared the MACcelerate's ratings with those of a 200MHz Umax Pulsar to see if a 7500 could be coaxed into providing workstation-standard performance. Bearing in mind that the Pulsar does have a 10% faster clock chip than the 7500, the MACcelerate bought the 7500 pretty damn close. This means you could pick up an old 7500 for £1,500, stuff the 200MHz MACcelerate card in it and have nearly the equivalent of a PowerMac 9500 for less than £2,150 – outstanding.

Whether the MACcelerate is worth buying or not depends on the Mac you have. If you own a PowerMac 7500, you should give it serious consideration. If you own a 9500/150, however, you'll see much less of a speed gain and might be better off waiting for faster cards to come out.

LINDSAY BRUCE

MACcelerate 180

If you own a mid-range PowerMac, the MACcelerate is your ticket to first-class performance. Excellent.

Features	92%
Ease of use	90%
Documentation	84%
Value for money	92%

MF rating 91%

How the MACcelerate measures up

The results in our table are given as percentages in relation to the benchmark system, a PowerMac 6100/60. The latter is given only as a reference point to give you an idea of how fast the 7500 is in relation to your Mac. The higher the percentage, the faster the Mac performed the test and the better its performance. Lower numbers are better in the real-world tests.

MacBench results

PowerMac 6100/60 (benchmark)	100	100	100	100
PowerMac 7500/100	178	173	139	141
PowerMac 7500 with MACcelerate	312	391	161	204
Umax Pulsar 200MHz 604e	412	437	147	157

Real-world tests

PowerMac 7500/100	27 seconds	24 seconds
PowerMac 7500 with MACcelerate	9 seconds	5 seconds

CPU

PowerMac 6100/60 (benchmark)	100
PowerMac 7500/100	173
PowerMac 7500 with MACcelerate	391
Umax Pulsar 200MHz 604e	437

FPU

PowerMac 6100/60 (benchmark)	100
PowerMac 7500/100	173
PowerMac 7500 with MACcelerate	391
Umax Pulsar 200MHz 604e	437

Disk

PowerMac 6100/60 (benchmark)	100
PowerMac 7500/100	139
PowerMac 7500 with MACcelerate	161
Umax Pulsar 200MHz 604e	147

Graphics

PowerMac 6100/60 (benchmark)	100
PowerMac 7500/100	141
PowerMac 7500 with MACcelerate	204
Umax Pulsar 200MHz 604e	157

Gaussian Blur

PowerMac 7500/100	27 seconds
PowerMac 7500 with MACcelerate	9 seconds

Unsharp Mask

PowerMac 7500/100	24 seconds
PowerMac 7500 with MACcelerate	5 seconds

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Fractal Design Detailer

Fractal Design's latest graphics package adds a new dimension to real-life tools and naturalistic paint effects. Alistair Dabbs explores the options and discovers that beauty may be only skin deep.

There's something about Fractal Design software which makes you either love or hate it, with no half measures. In the hate camp are traditional professionals who don't like Fractal's habit of bastardising accepted approaches to graphic design and confusing users with non-standard terminology and top-heavy interfaces. But anyone in the (if you'll excuse the expression) love camp will appreciate *Detailer* as yet another piece of software ingenuity which makes light work of normally difficult 3D tasks, and makes them fun, too.

Detailer enables you to apply image maps and other surface effects to 3D models. You can do this in any 3D/animation package, but *Detailer* exists because 3D graphics packages always make the job extremely fiddly.

Case in point

Imagine you're about to apply paint or other decorative matter to a vase. In real life, you'd hold the vase in one hand and a brush in the other, and just paint. This



Wrapping a photograph of a room or landscape around an object to give the impression of high-gloss reflectivity isn't new, but in *Detailer* the screen refresh is virtually instant. This is not a rendered image, remember, just the preview window in which you can continue to rotate and paint the model.



The wonderful image hose. Want a coke bottle full of leaves? Just hose them in.

is generally how *Detailer* works – it enables you to open a 3D object file and start painting directly onto the surface.

In contrast, using your typical 3D graphics package is more akin to placing a photograph of the vase in the middle of the road and trying to paint it with a 50ft brush and a pair of binoculars. You then sellotape the photograph to the vase. Although 3D graphic artists are perfectly adept at this skilled act, *Detailer* makes it easy enough for the rest of us to try.

However, *Detailer* isn't a 3D graphics package in its own right. It comes with a small number of object creation tools limited to the most basic primitives: cubes, spheres, cones and the like. You can't combine any of these primitives to create more complex objects, so it seems that they have been included for experimental play rather than work. They are virtually useless to the serious 3D artist wanting to create models from scratch.

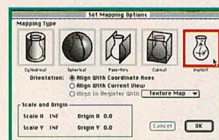
Instead, you are expected to import 2D

or 3D information from proper modelling applications and then paint onto them. *Detailer* can import a useful array of file formats, although the selection certainly isn't comprehensive. Bare-bones 3D information can be imported as DXF files or in QuickDraw 3D's 3DMF format, so you can make use of information from most modern modelling applications. On

the 2D front, it supports PICTs, TIFFs, TARGAs and JPEGs, and if you want to import pre-rendered images with masks in place, you can import RIFF, TIFF and native Photoshop 2 and 3 files.

QuickDraw 3D continues to develop (version 1.5 is here already), so *Detailer*'s 3DMF support could do with cleaning up. For example, *Detailer* does not support 3DMF procedural primitives,

preferring objects to be defined as grids or meshes. This is simply something you will have to remember when outputting a model to 3DMF, but it can be annoying on those occasions when you forget, only to find that all the boxes, cones, poly-



When painting or applying a texture or image, you are prompted to choose between five mapping options, from spline-like wrapping to surface-hugging.



1 Text, like any image or colour, can float on the surface of an object and wrap round to fit its shape – even if it's a sphere. First, choose a font and type size.



2 Select the Text tool and click on the model. An optional image window opens up for you to type in, although you can just type onto the sphere if you prefer.



3 Group the letters in the Materials Floater List palette. The text then maps on to the object.



gons, discs, toruses and so on have been discarded when the model was imported into *Detailer*.

Once you start working in the program, *Detailer* is a real joy to use. If painting directly onto the object surface is a problem, you can paint into an adjacent 2D image map window. Both views update simultaneously in real time. If freehand painting isn't your forte, you can make use of the other mapping features, including cylindrical, spherical, implicit and pass-thru mapping. There's also a convincing set of texture-mapping tools, including bump, highlight, reflection and glow tools.

You can work on models containing up to 240 objects, and apply mapping effects to multiple objects if you combine them first. The program is no slouch, either, performing pleasingly well even on humbler 603e-based PowerMac Performas. However, *Detailer* won't run at all on a 68K Macintosh.

Bring on the virtual turps

Although you can quite adequately render your models within *Detailer* itself, complete with ray tracing, 3D professionals will almost certainly need to pass them back to a full 3D graphics package to make use of more sophisticated rendering tools. To this end, *Detailer* currently comes bundled with a copy of Fractal Design's *Ray Dream Designer* 4.1.2, which is supplied with its own custom *Detailer* export filter. You can of course work with any package and pass information back and forth as 3DMF and image files, but Fractal has obviously built a close relationship between *Designer* and *Detailer*. We expect to see this develop considerably in future releases of both products.

That said, *Detailer*'s interface owes very little to *Designer*. It's a carbon copy of the interface used by *Fractal Design Painter*, the "Natural-Media" 2D art package. Anyone familiar with *Painter* will appreciate this, because 3D packages tend to work like vector illustration software or use a proprietary approach. The *Painter* interface is as proprietary as you can get, but at least current users will feel on familiar territory.

Detailer is kitted out with a fair range, although not all, of *Painter*'s drawing and painting tools, which is a great boon to the artist. Among the tools brought over



1 If you intend to render your model in *Detailer*, you may as well have fun with the lighting. Take this dull old paint can...



2 ...and don't just add new light sources, but also give them a dash of colour using the Light Materials palette.



3 Multicoloured lights add interest and can create unusual and dramatic visual effects when you shine them on reflective objects.

from *Painter* are the bulk of the chalks and pens, artistic brushes and the wonderful image hose, which enables you to spray multiple images in one go – leaves onto a tree, fur onto an animal, and so on. Another clever feature is the way you can gradually fade an Undo operation with a slider rather than jumping back a whole step.

While the *Painter*-style interface is fine once you get the hang of it, it is extremely difficult to learn (thank heavens for the first-class full-colour manual). The screen quickly gets filled up with palettes, too. This is partly due to poor design. A typical example is the Materials Floater List palette, which ought to take up no more screen space than, say, *Photoshop*'s Layers palette. In fact it occupies about three times as much room. This is particularly disappointing because, as with *Photoshop* and layers, anyone wanting to get the

most out of *Detailer* will be using Floaters quite a bit.

Another niggling point is that while pressure-sensitive graphics tablets are supported generically, Fractal still hasn't managed to persuade Wacom to build in support for the EraserPen – not in *Detailer* and not even in *Painter* 4.

The next best thing

Despite these hardware issues, the biggest argument against *Detailer* is that you're paying well over £300 for what is essentially an add-on utility for the 3D professional, or a charming toy for the 2D artist. What makes it worth the expense – apart from the bundled *Ray Dream Designer* (worth around £200) – is the fact that it can do what no other product can do in the 3D market, and do it damn well. It really does put the sensitive art of image mapping into ordinary hands. It's still not quite like picking up a vase and paintbrush in your own hands, but until Fractal builds in support for a VR headset and gloves, this is the nearest approximation to date.

Fractal Design Detailer

Detailer is powerful, fast and innovative. 3D professionals might scoff, but it satisfies a genuine need for a form of direct 3D image mapping which every artist can understand.

Features	90%
Ease of use	75%
Documentation	90%
Value for money	80%

MF rating 85%



If you make an error while painting or applying a filter, you don't need to Undo it completely. The **Fade Undo** feature enables you to go part of the way back, using a percentage slider and preview.

Memory

The size and complexity of your models will have a knock-on effect on your hardware, especially memory. While *Detailer* is effective enough in its minimum recommendation of 14Mb for small models, working on a view at 16-inch monitor resolutions (typically 832 x 625) will demand 26Mb of application RAM.

Jargon Busters

■ **3DMF**: Short for "3D metafile", the file format for QuickDraw 3D data. 3DMF does not include surface map information.

■ **Bump map**: An image applied to a model surface to give it the illusion of texture. Without a bump map, the surface will appear smooth.

■ **DXF**: A file format for 3D data, hailing from Autodesk products on the PC. DXF does not include

surface map information or UV co-ordinates.

■ **Glow map**: Diffuse colour effects applied to an object after other shading effects have been applied. Glow maps around lights add realism.

■ **Implicit mapping**: Mapping applied according to UV co-ordinates for every point in a model. It's important for animation, where models can

change shape, and the surface images should change with them. Also known as "vertex" mapping.

■ **Model**: This term is not to be confused with "object". *Detailer* uses the term "model" as synonymous with "scene". It covers objects, lighting and background in a particular camera view. A model contains all surface map information.

■ **Object**: A 3D geometry data set

made up of shapes and/or smaller objects.

■ **Pass-thru mapping**: A planar map application, where surface points are projected in a single direction to points on a plane. Images are effectively projected, cinema-style, through the object onto its flat, normally rectangular surfaces.

■ **UV co-ordinates**: These define point co-ordinates in 3D space.



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Claris Organizer 2

Feel the need to sort your life out and get organised? This nifty new package provides you with access to vital information at your fingertips – and also ensures that you'll never forget a birthday again...

Upgrade

Claris Organizer 2 is the older brother of *Claris Organizer*, which was reviewed in *MACFORMAT* 31, scoring 84%. If you already have the original version, you can upgrade it to the level of version 2, for the cheaper price of £57. Get the details from Claris on 0345 413060.

Forgotten to complete a task? Set up *Organizer* so that it can remind you what needs doing, and when. Sadly, it can't do everything for you!

The choice used to be either a "day-by-day" diary or the "week-to-view". Then we had card files and Filofaxes – but no more. The Personal Information Manager (PIM) is here to put order into your life. However, if you're contemplating switching to a PIM, it has to be not only easy to use, but also easy to understand. It must also be reliable and, ideally, capable of running on more than one machine (a PowerBook and a desktop) and neither under nor over-featured. A tall order?

Claris Organizer 2 is a major step up from the first version and is, quite emphatically, all of the above. It runs brilliantly, and enables you to organise your information in ways which make sense and which you can learn quickly.

Improving on the original version, *Organizer 2* contains four modules – Calendar, Tasks, Contacts and Miscellaneous notes. You can place your appointments in all of them, and the sections also interact with one another. The calendar can be displayed in daily, weekly or monthly formats, and tasks, contacts and other miscellaneous notes are all there to make your life easier. A simple toolbar across the top controls your work in these areas, though each specific section has its own clearly sepa-

rated menus and keyboard equivalents.

The new-look version has some neat options. Instant Organizer enables you to work in the program without fully opening it, and the Synchronise feature, which enables the synchronisation of laptop and desktop files, soon becomes invaluable. Instant Find is a useful feature and the Contact module is

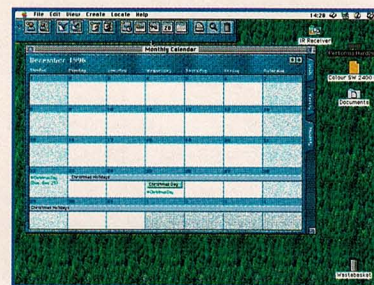
superb, enabling you to customise addresses, postcodes and telephone formats automatically, according to country. You can also work with custom fields of your own and the Instant Filtering feature is particularly flexible and easy to adjust, so that your fields do just what you want.

Claris Organizer 2 has

nearly everything you could wish for – its only real failing is the lack of networking and server-based meeting-making capabilities, which other packages such as *Now Up-to-Date* and *ACT 2.5* do support. However, a key attribute in this latest version is that it now accommodates both e-mail and Web links, ensuring powerful contact management capabilities.

As well as keeping track of all your commitments, *Claris Organizer 2* has some superb additional features, such as the new Decor feature, which enables you to personalise your organizer. Furthermore, you'll never forget a birthday again with the Birthday Minder feature: simply place a date on a Contact card, and *Claris Organizer 2* will remind you of this date forever more. Other features include The Gripper, where you can link any items using the drag and drop facility, and the Memorizable View, which is handy. If you need to call up an item continually, this will "memorise" one or more filters, making your life easier.

A key improvement from the original version is the way attachments are handled – any item can be attached to any other. Typically, you might have a list of



It would be good if the Calendar function had more flexibility in the way you view it.

details for calls you want to make in the Notes section. Here, you simply attach the list to a timed, repeating task and enable *Organizer 2* to either dial the numbers through your modem, or address a written or electronic communication to each contact from the contact list, automatically launching *eMailer* or *Claris-Works*. This broken-down approach leads to clear, manageable screens and great flexibility in the way you can view, sort and filter tasks and contacts.

The documentation reaches the usual Claris standards and should you need any additional assistance, there is ample help and an on-line "tour" available. So, could any area have been better? Well, greater control over the appearance of the calendar would be good – *Up-to-Date*,

for example, enables you to determine the size and position of the date numbers in the calendar. Clearer instructions for importing data from certain other packages would also be beneficial, as well as more flexibility in the Contacts database, which cannot accommodate addresses with more than two

"street" lines. Additionally, this version of *Claris Organizer* costs over £20 more than the original – quite a steep price increase.

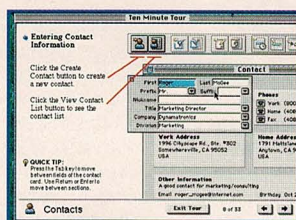
But these are minor criticisms. If you lead a hectic lifestyle and crave order, then you may just find that *Claris Organizer 2* is the next indispensable tool in sorting out the chaos. **MARK SEALEY**

Claris Organiser 2

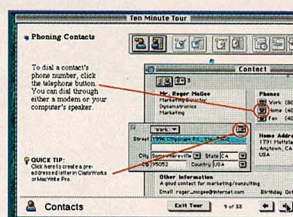
Superb. Able to handle links between information both internally and to the Net, and is flexible and robust – no networking, though.

Features	80%
Ease of use	87%
Documentation	88%
Value for money	80%

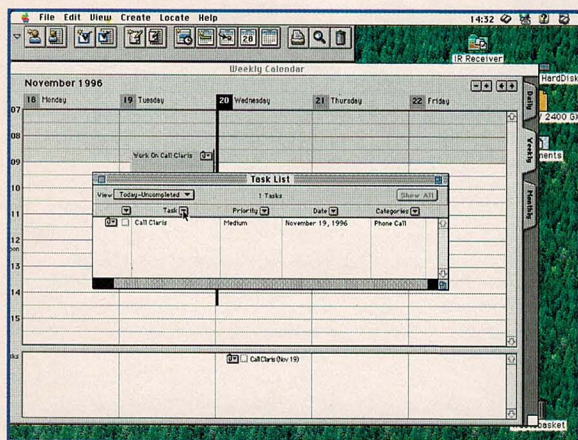
MF rating 86%



The Ten Minute Tour makes it easy to get the hang of *Claris Organizer 2's* new features.



Use *Organizer* to call your contacts for you – either through a modem or by tone generation.





PRICE £14.99	ON SALE Now	CONTACT Mindscape on 01444 246333	WEB SITE http://www.mindscapeuk.com/
MAC Processor: 68040 • RAM : 5Mb	POWERMAC Processor: any • RAM : 5Mb	REQUIRES System: 7.0 • HD space : 13Mb • Screen : 640 x 480 • Colours : 256 •	
Extras : CD-ROM drive			

Catz

First there was Dogz, and now there's Catz. What's next – Budgiez and Hamsterz? This is your chance to adopt a kitten, guaranteed to both brighten up your day and guard your Desktop...

Cats, apparently, were domesticated in ancient Egypt three or four thousand years ago. Since then, we've had black cats stoking our superstitions, the Cheshire Cat's sinister grin in *Alice in Wonderland*, Catwoman from the *Batman* series, and the so-cool-he's-goofy "Cat" character in *Red Dwarf*. More recently, the cat has even entered the popular mainstream through Phoebe's poignant "Smelly Cat" song in *Friends*.

Now, as a follow-up to *Dogz* (MacFORMAT 39), Mindscape is offering you the chance to adopt a Desktop domestic. Forget *The Cat in the Hat*, this program puts the cat in your Mac. Screensavers have come a long way since *After Dark's* aquarium.

As with *Dogz*, *Catz* first invites you to meet five kittens, each with its own personality. One's a scaredy cat; another, for instance, is sly and sophisticated, while another still is playful and jubilant in nature. When you've decided which one you'd like to keep, you simply click the Adopt button, name your new feline friend, and it's then thrust into its own

Desktop playpen.

The most captivating thing about *Catz* is the caricatured cat-like animation your slinky pet is endowed with. It will stalk, pounce, play, lazily recline and go through numerous other feline motions. If it's being disobedient, you can pick it up by the scruff of its neck and haul it

over to another part of its playpen. Likewise, there's a cupboard full of toys, food and other implements which can be introduced into your new pet's environment. Let the torment begin.

Having a reputation for obtuse and stubborn behaviour, cats are natural targets for torture. After all, a cat would do it to you if it

could, as wounded birds and rodents the world over will testify. Hence, you can drive your cat wild by spraying it with water, tease it with a ball of wool or dose it repeatedly with flea powder.

On the other hand, if you're a cat lover, you can stroke your pet, amuse it, feed it and generally enjoy its company. For added pleasure, there's even a mousehole at the bottom of the cupboard out of which a small grey mouse will scurry every so often. Your cat will chase it about, and may even catch it. But don't worry – as in *Tom and Jerry*, the mouse always gets away in the end.

Indeed, these catz present a very sanitised version of the feline organism. Unlike real cats, they won't bring you dead things or torture the hell out of lesser creatures. Nor will they tear up curtains



First, you have to choose one of the kittenz from the adoption screen. They come in five flavours including scaredy, pouncing, sophisticated, home-loving and playful.



Make your fashion-conscious feline look ridiculous with a coat of paint.



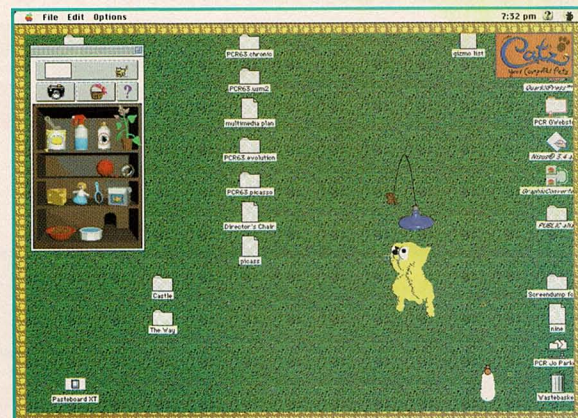
The rodent menace

Catz always...

... love to...

... torture...

... mice.



You can turn your working Desktop into a catz playpen. Sadly the cat won't eat your work, so that old excuse is out of the question.



Nothing like a bit of catnip to drive felines crazy. They can't get enough of the stuff, and when they eat it they start acting all weird. Use sparingly.



You can spoil your pet by giving it all the toys and food at once, but unlike their physical world counterparts, these catz want attention. You must play with them.

or leave odorous deposits in a litterbox.

No, *Catz* is just unrelentingly cute. Run this program at work (if you can get away with it) and your colleagues will crowd around your Mac cooing at your kitten, and demanding that you feed it, play with it and spray it with water.

As far as functionality goes, *Catz*, like *Dogz*, doubles as a password-protected screensaver. Leave your Mac idling for a preset period, the screen goes black and your cat comes out to play. On the options side, you can take pictures of your cat, paint it and choose from 17 background patterns for your cat's playpen.

The truly annoying thing about the program is the sound. There's no caterwauling, but there are far too many squeaky-voiced "meows" and muffled "peeps". Real cats are usually dignified animals, but this litter is full of moaners.

Fun and perfectly functional, *Catz* won't divert too much cash from your pocket and it will undoubtedly make a great present for the Mac-owning cat lover in your life. **GARRICK WEBSTER**

Catz

Great if you're a cat lover – very similar to *Dogz*. A great gift, appropriately priced.

MF rating 70%

Alternatively...

If you want a Desktop pet with a bit more complexity and depth to it, you might be better off waiting for the A-life game *Creatures*. For details see MACFORMAT 42 or call Warner Interactive on 0171 391 4300.



The first time our Catz screensaver was activated, what should appear but a dog. This dribbling hound will periodically chase your feline – disgusting.

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POWER MACINTOSH HARDWARE & BUNDLES

PowerMac 8200/120



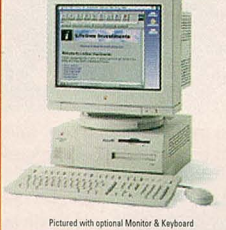
- 120MHz Motorola PowerPC 601 Processor (on upgradable daughterboard) • 256k Level 2 cache
- 16Mb RAM • 1Mb VRAM • 1.2Gb Hard Drive
- 8x Speed CD ROM Drive
- 3 PCI expansion slots

Preloaded with MS Office 4.2.1

PowerMac 8200/120 16/1200 8xCD	only	£1223
Bundle Options	16Mb	32Mb
with 15" monitor & keyboard	£1473	£1527
with 17" monitor & keyboard	£1653	£1707

Pictured with optional Monitor & Keyboard

PowerMac 7600/132



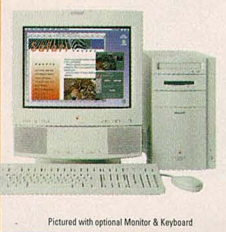
- 132MHz Motorola PowerPC 604 Processor (on upgradable daughterboard) • 256k Level 2 cache
- 16Mb RAM • 2Mb VRAM • 1.2Gb Hard Drive
- 8x Speed CD ROM Drive
- 3 PCI expansion slots

Preloaded with MS Office 4.2.1

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Bundle Options	16Mb	32Mb
with 15" monitor & keyboard	£1899	£1953
with 17" monitor & keyboard	£2079	£2133

Pictured with optional Monitor & Keyboard

PowerMac 8500/180

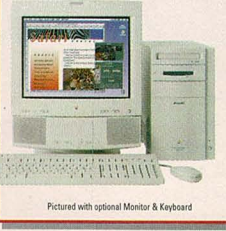


- 180MHz Motorola PowerPC 604e Processor (on upgradable daughterboard) • 256k Level 2 cache
- 16Mb RAM • 2Mb VRAM • 2Gb Hard Drive
- 8x Speed CD ROM Drive
- 3 PCI expansion slots
- Composite and S-Video inputs/outputs

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Bundle Options	16Mb	32Mb
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Pictured with optional Monitor & Keyboard

PowerMac 9500/200



- 200MHz Motorola PowerPC 604e Processor (on upgradable daughterboard) • 512k Level 2 cache
- 32Mb RAM • 2Mb ATI Video Card • 2Gb Hard Drive
- 8x Speed CD ROM Drive
- 6 PCI expansion slots

PowerMac 9500/200 32/2000 8xCD	only	£2713
Bundle Options	32Mb	64Mb
with 17" monitor & keyboard	£3143	£3281
with 20" monitor & keyboard	£3153	£3651

Pictured with optional Monitor & Keyboard

PowerMac 9500/180 MP



- 2 x 180MHz Motorola PowerPC 604e Processor (on upgradable daughterboard) • 512k Level 2 cache
- 32Mb RAM • 2Mb ATI Video Card • 2Gb Hard Drive
- 8x Speed CD ROM Drive
- 6 PCI expansion slots

PowerMac 9500/180 MP 32/2000 8xCD	only	£3357
Bundle Options	32Mb	64Mb
with 17" monitor & keyboard	£3787	£3925
with 20" monitor & keyboard	£4157	£4295

Pictured with optional Monitor & Keyboard

PowerMac 9500/200 VAR



- 200MHz Motorola PowerPC 604e Processor (on upgradable daughterboard)
- 512k Level 2 cache • 2Mb ATI Video Card • 8x Speed CD ROM Drive • 6 PCI expansion slots

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Bundle Options	32Mb	64Mb
with 17" monitor & keyboard	£2849	£2987
with 20" monitor & keyboard	£3219	£3357

Pictured with optional Monitor & Keyboard

PowerMac 4400/160



- 160MHz Motorola PowerPC 603e Processor
- 256k Level 2 cache
- 16Mb EDO RAM • 1.2Gb Hard Drive
- 8x Speed CD ROM Drive
- 3 PCI expansion slots

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Pictured with optional Monitor & Keyboard

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- 12Mb RAM
- 2Gb Hard Drive
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- Design keyboard

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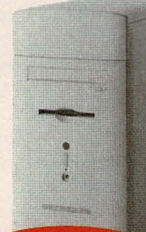


- 160MHz or 180MHz PowerPC 603e Processor • Optional 256k Level 2 cache
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- PCI expansion slot • Integral 15" monitor • Design keyboard

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Performa 5400/180 16/1600 with V-in-TV	only	£1599

StyleWriter 1500 only £109 extra

Performa 6400 Home Office



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- Optional 256k Level 2 cache (standard on 6400/200) • 16Mb RAM
- 1.6Gb or 2.4Gb Hard Drive • 2 PCI expansion slots • Design keyboard
- 8x Speed CD ROM Drive • Internal 28k8 voice/fax/modem

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- 200MHz PowerPC 603e Processor
- 256k Level 2 cache • 24Mb RAM • 2.4Gb Hard Drive
- 8x Speed CD ROM Drive • Internal 28k8 voice/fax/modem
- Video-In & TV Tuner
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- Optional Removeable 6x Speed CD ROM Drive

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PowerBook 5300cs 8/750	only	£1234
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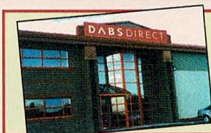
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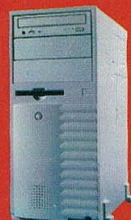
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100% compatibility
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- 16Mb RAM (expandable to 272Mb - 2 DIMM slots)
- Built-in stereo sound
- MacOS 7.5.3

UMAX APUS 2000/166MHz £849

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- 1.2Gb fast SCSI hard disk
- 8-speed SCSI CD-ROM
- 2 PCI slots (1 full length, 1 half length)
- 256K Level 2 cache socket (upgradeable to 1Mb)
- 16Mb RAM (expandable to 272Mb - 2 DIMM slots)
- Built-in stereo sound
- MacOS 7.5.3

UMAX APUS 3000/200MHz £1299

- 200MHz PowerPC 603e
- 2.1Gb fast SCSI hard disk
- 8-speed SCSI CD-ROM
- 3 PCI slots (2 full length, 1 half length)
- 256K Level 2 cache socket (upgradeable to 1Mb)
- 16Mb RAM (expandable to 272Mb - 2 DIMM slots)
- Built-in stereo sound SRS 3D surround sound
- MacOS 7.5.3

UMAX PULSAR 166MHz £2195

- 150MHz PowerPC 604
- 2Gb fast SCSI hard disk
- 8-speed SCSI CD-ROM
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- 512K Level 2 cache (upgradeable to 1Mb)
- 16Mb RAM (expandable to 1.04Gb)
- 128-bit graphics accelerator with 2Mb VRAM
- MacOS 7.5.3

UMAX PULSAR 200MHz £2595

- 180MHz PowerPC 604e
- 2 Gb fast SCSI hard disk
- 8-speed SCSI CD-ROM
- 6 PCI slots
- 512K Level 2 cache (upgradeable to 1Mb)
- 16Mb RAM (expandable to 1.04Gb)
- 128-bit graphics accelerator with 2Mb VRAM
- MacOS 7.5.3

UMAX PULSAR 225MHz £2995

- 200MHz PowerPC 604e
- 2 Gb fast SCSI hard disk
- 8-speed SCSI CD-ROM
- 6 PCI slots
- 512K Level 2 cache (upgradeable to 1Mb)
- 16Mb RAM (expandable to 1.04Gb)
- 128-bit graphics accelerator with 2Mb VRAM
- MacOS 7.5.3

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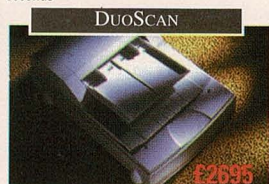
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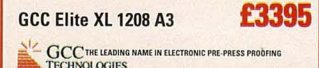
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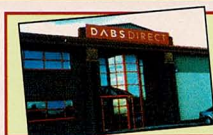
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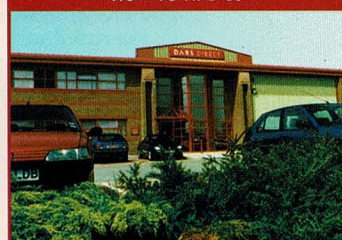
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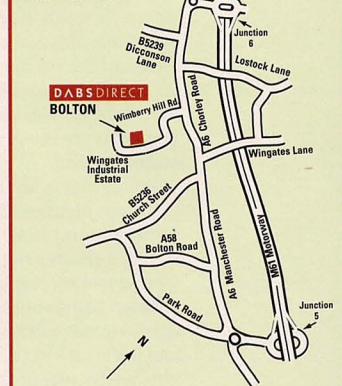
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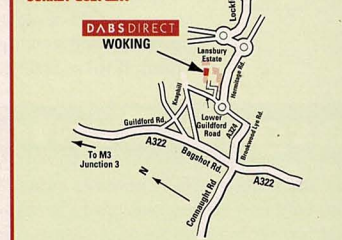
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Sound your best

In this final part of our look at digital audio processing software, music maestro Ian Waugh examines utilities for creating loops, manipulating samples and tweaking your recording before finally converting it.

Over the last three issues, we've looked at how you can twist, stretch and even alter your digital audio, using plug-in utilities to produce the sounds and effects that you want. In this final instalment of the series we check out some looping tools, some software to help you work with samples and some post-production utilities that will enable you to make that perfect recording even better.

If you're interested in finding out more about the digital processing utilities available, check out the last three issues of MACFORMAT. If you missed these, turn to page 144 for more details. Meanwhile, to refresh your memory, here's a quick recap of the important bits. If you're unsure of any of the terms used, take a look at the "Jargon Busters" box at the bottom of the page – it

explains all you need to know, turning you from a novice into a technically aware muso-type. Or something similar, at any rate.

Most of the software we've looked at is of the plug-in variety. Plug-ins are add-on modules which work with Digidesign's *Pro Tools* (TDM plug-ins), *Sound Designer II* (SDII) or *Adobe Premiere*. They install inside their parent program folder, can be called from the main program's menu and integrate almost seamlessly.

You can also buy stand alone (SA) software. This doesn't integrate into any program; rather it processes audio on its own and saves it to disk. The advantage of SA software is that the processed files can be imported into virtually any digital audio software. The advantage of the plug-in is that it works within its host environment, meaning that you don't have to learn how to use another package.



Demos of Turbo-Morph and Sample-Search.

Looping tools

In the early days of sampling, when 1Mb of RAM cost a week's wages and the whole subject of "sample creation" was something of a black art, the wizards who commanded the most respect were those who could create a seamless loop.

For example, as there was usually insufficient memory in a sampler to record a string sound lasting 30 seconds, a section of a shorter sample was put into a loop, enabling you to play it indefinitely without using tons of memory. With irregular waveforms, this is not easy – and if the end of the looped section does not exactly match the beginning of it, you'll get a click, a glitch or some other nasty which tells everyone that your looping skills are in dire need of a government retraining scheme.

Fortunately, things have improved and many pieces of digital audio software now include looping facilities as standard. If these facilities don't make the

looping process automatic, then they do at least make it a more civilised affair.

Infinity

AnTares
SA £280
Unity Audio

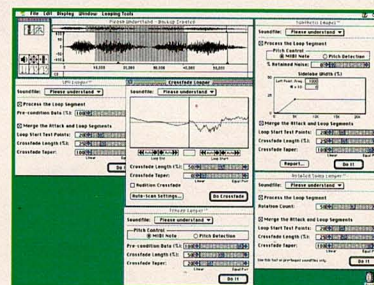
You want looping tools? Then you've definitely come to the right place! *Infinity* has no fewer than five different looping processes, designed to loop specific types of sound.

The Crossfade Looper with Smart Auto Scan works on traditional looping principles and blends the start of the loop with the end of it to create a smooth transition back to the start. The Auto Scan facility searches the soundfile for places where the sound at one loop point matches the sound at another. A window then shows the end and start points of the loop and you can tweak the two, if necessary, to find that *perfect* loop point.

The Freeze Looper analyses your loop to create a periodic (or regular) waveform. You can create seamless loops of very short duration, effectively "freezing" the timbre of the sound. This is particularly effective for looping solo sounds and decaying sounds with harmonics.

The Rotated Sums Looper (RSL) can improve your problem loops by randomly layering multiple copies of the loop to distribute sonic irregularities. You need to have a reasonable quality loop first off before you use this, as clicks and "pop" noises will be redistributed as noise. You can use the Crossfade Looper to smooth out your loop data before processing it with the RSL.

The Spectral Phase Randomisation (SPR) Looper is particularly useful if you



Infinity has looping routines that you'd never dream of – and more besides.

use it with irregular waveforms like strings, choirs and analogue sounds. It analyses the spectral content of the loop and then redistributes that content throughout the loop, in order to preserve the continuity.

The Synthesis Looper is a new addition to *Infinity* and you can use it to selectively smooth out lumpy-sounding frequencies in chorused and ensemble sounds. The new sound you create will be more stable and the loop repetitions less noticeable. It's primarily for use with mono sounds and can even be used to add chorus effects to solo sounds.

Infinity's monochrome display betrays its early origins (although it was updated in 1995), and we did have a helluva job getting it to work. It was apparently conflicting with an Extension – refusing to run and displaying an error message saying that there was not enough memory (though our Mac had 20Mb of RAM). It worked fine after we held down [shift] to disable Extensions on startup – but after four hours spent manually removing literally everything from the **System** folder, we still couldn't get it to run without holding down [shift].

The manual is quite thorough, but it would benefit from a step-by-step tutorial. The pack includes utilities that enable you to transfer samples between

Jargon Busters

Bits: The units in which audio is measured when it's digitised. CDs use 16 bits and produce excellent quality – but many professional audio applications use 20 or even 24 bits, which is almost as high fidelity as you can get. If you have to reduce this to 16 bits for a CD – or to eight bits for multimedia – then obviously you lose quality. Some digital audio programs are designed to maximise the quality when downsampling in this way.

Double-tracking: The recording of another part onto a new track to give the impression that there is more than one singer or instrument playing the part.

IDR: Increased Digital Resolution, a proprietary "resampling" technology developed by Waves to preserve and increase the resolution of the audio.



the Mac and an Akai S3000 or an Ensoniq ASR-10. More support for a wider range of instruments would certainly increase *Infinity*'s appeal, but running problems apart, there's really nothing else quite like it.

If loops are your thing, and you can ensure that it will run properly on your Mac's system, then *Infinity* is an absolute must-buy item.

Infinity

MF rating 79%

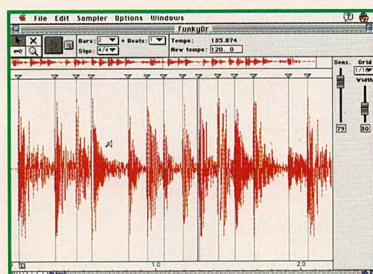
ReCycle!

Steinberg

SA £199

Harman Audio

ReCycle! is not so much a looping tool as a grooving tool! It's primarily designed for use with drum sample loops. The display shows a standard waveform format and if you adjust the Sensitivity slider, lines then appear at the peaks of your waveforms. This process will effectively cut



ReCycle!'s Sensitivity slider divides the loop into segments which can each be triggered by a separate MIDI note.

your sample into segments where "hits" (loud sections of the audio) occur.

The idea is to divide your loop into hit-size or beat-size segments. Once this is done, you can transmit each slice to your sampler as a separate sample. The routine also creates a MIDI file and when played in a sequencer, each note triggers one of the samples. So, if you play the MIDI file to the sampler, it plays the loop as is. Have you got this? It's essential to understanding the way the program

works. In a nutshell, then, what *ReCycle!* does is to break your loop down into sections, each of which can be triggered individually by MIDI notes.

Now, if you think about it for a minute, there are lots of things you can do with this MIDI note and sample arrangement. You can change the tempo of your loop without changing the pitch, simply by playing the notes at a different speed. You can play the segments in a different order, simply by rearranging the order of the MIDI notes to change the rhythm of the loop, and you can substitute one sample for another to change the sounds within the loop. In other words you can manipulate sample loops in ways which were previously not possible – at least not without an inordinate amount of manual labour.

And on top of that, *ReCycle!* is fun. If you're into rhythmic loops of any kind, you'll want this.

ReCycle

MF rating 90%

Sample and Synthesis utilities

TurboSynth

Digidesign

SA £234

Digidesign

A software-based synthesiser. Using "virtual" modules such as oscillators, filters, envelope generators, time and pitch shifters and so on, you can generate and process sounds which can be sent to *SampleCell* (Digidesign's Mac-based sampler) or saved in SDII format. *TurboSynth* has attracted an almost cult following among analogue synthesis aficionados, but it will only run on a NuBus-based Mac.

Sample Search Audio Toolkit

Gallery Software

SA £234

Gallery Software

This could fit into our section on post production, starting overleaf, but since its main aim is to help you organise samples, we've put it here.

Sample Search is essentially designed for use with *SampleCell* and acts as a house-keeper by putting samples, instruments and banks in the correct order so you don't have to worry about where they are on your hard disk – you can be as sloppy as you like! It can even find and catalogue samples on off-line volumes and it works over Ethernet, too.

And it's fast! It can scan gigabytes of disk space and list hundreds of files in seconds. The search routines can be used to find any kind of file, too, not just samples. It can read data from an audio CD and convert it to an AIFF file, and it can convert AIFF files to SDII and to Windows' WAV files for use on the PC.

Sample Search is the utility which really ought to have been included with *Sam-*

pleCell. It's an essential accessory if you're intending to become a *SampleCell* user.

Sample Search Audio Toolkit

MF rating 90%

Interpreter

Gallery Software

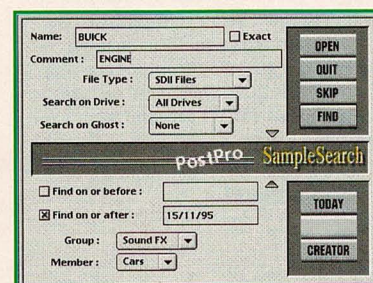
SA £222

Gallery Software

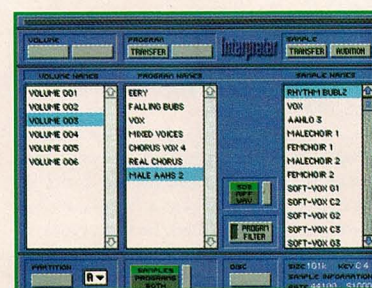
Interpreter enables you to access the sound libraries of non-Mac samplers. It can read CD-ROM, optical, SyQuest and SCSI hard disks, and supports Akai S1000/3000 CD-ROMs. It also uses a hard disk installation system for copy-protection purposes.

Operation is just about as easy as it gets. Put a CD in the CD-ROM drive or connect the SyQuest and the program's single window shows the samples it contains. It follows the hierarchy used by each specific sampler, so it's easy to find your way around.

Highlight a sample and click the **Audition** button to hear it through your



Sample Search can search a whole stack of drives for samples in a few seconds



Interpreter's window shows Volumes, Programs and the samples contained therein. Nifty.

Mac's speaker or a Digidesign audio card. You can transfer individual samples or complete programs to your hard disk to use in *Sound Designer II*, AIFF or WAV format (for use on a PC).

If you use a lot of sample CDs, this is totally brilliant. No longer do you have to scroll through your sampler's tiny LCD to see what samples are on a hard disk. No longer do you have to load them excruciatingly slowly in order hear what they sound like. If you want to use them with a Mac-based digital audio program, you simply copy them across to your hard disk. Speedy and easy.

But excellent though it is, *Interpreter* could be even better. Facilities to rename, delete and move samples would be useful, as would a few edit options. Also, what about an option to transfer data the other way – from the Mac to a SyQuest?

Gallery hopes to include the translation of disks from other sampler manufacturers later in the year and will then offer a single integrated package, with the ability to translate a variety of disks directly into *SampleCell II* format.

Interpreter

MF rating 85%



CD Studio

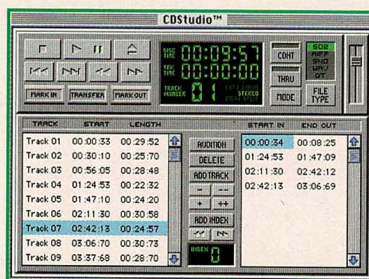
Gallery Software

SA £112

Gallery Software

CD Studio transfers audio data from audio CDs to your Mac's hard disk. It requires an Apple-compatible double-speed (at the very least) CD-ROM drive and transfers the audio via SCSI, keeping the data in the digital domain. The transfer of audio data is actually accomplished by hooking into QuickTime – and you can use QuickTime itself to transfer digital audio without the aid of *CD Studio*. If you're on a tight budget, this is probably the way to go.

However, if you've got £100 to spare, then *CD Studio* is easy to use and you get a good user interface with a few more



CD Studio enables you to easily transfer audio data from a CD to your Mac.

facilities, including the ability to save your file in one of five formats – SDII, AIFF, SND, WAV (for Windows) and QuickTime. *CD Studio* can also create a mono recording from a stereo file and

split a stereo recording into left and right files. If you want, you can also “audition” the audio – and set start and end points so that you don't have to transfer a complete track. This is a useful and time-saving facility.

CD Studio is ideal for use with sample CDs – and although a few more edit facilities would be nice, it is really very easy to use. The *CD Studio* facilities are included in *Sample Search* too, so if you already have that, then there's no need to buy this too. However, if you only need audio CD transfer facilities and are likely to use them a lot, it's certainly well worth a look.

CD Studio

MF rating 81%

Production and Post Production Tools

In the analogue studio, the term “post production” encompasses a range of functions which you may have to undertake after you've produced your master tape. Post production could include, for example, additional editing or organising the order of the tracks for an album.

In the world of digital audio, it's not always clear when production has ceased and post production has begun, as there are many ways in which a “final cut” can be enhanced and edited. In most cases there is not necessarily even a master tape as such, just a file on a disk, which blurs the distinction even further.

However, you may need to convert the sample file format, for example, and there are various tidying-up jobs to do – archiving your digital data to free up hard disk space, checking the stereo spread, or giving the sound a boost using an enhancer. In that case, here are the tools to do the job.

MasterTools UV22

Apogee

TDM around £620

Mediaspec

The UV22 Super CD Encoding process captures 20-bit resolution and detail onto standard 16-bit formats, so increasing the perceived quality of your sound. You can use it as the final step in the production of a CD.



MasterTools helps maintain 20-bit quality on a 16-bit CD.

AD-1 Pro Audio Analyzer

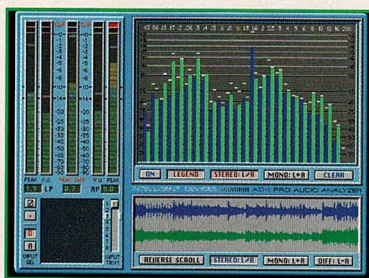
Intelligent Devices

TDM £498

SA £387

Unity Audio

A real-time audio monitoring tool which provides precise stereo



Intelligent Devices' *Pro Audio Analyser* offers real-time monitoring of audio signals, ideal for checking your recording before you finally send it for mastering.

peak and average metering, clip indication, headroom margin, left and right sum and difference ratios, real-time spectral analysis, phase metering and waveform clip history – ensuring that you get the perfect digital master.

TimeGuard

Steinberg

TDM £399

Harman Audio

TimeGuard provides a timing analyser which measures delays between two audio tracks. A timing accuracy meter makes it easy to detect differences between tracks, with an accuracy of up to one sample. Shifts in timing can be displayed in either samples or milliseconds. Since any plug-in produces delays in the signal flow, *TimeGuard* can check for these and correct any shifts between your two tracks.

WaveConvert

Waves

SA £229

Natural Audio

WaveConvert was designed principally for the multimedia industry. It converts Mac

and PC audio files to and from sample rates, bit resolutions, mono and stereo, and file types. It supports AIFF, SND, SDII and WAV files and also runs native on the PowerMac.

Normally, converting a file to a lower sample rate – technically called down-sampling – adds noise and distortion to the result. *WaveConvert* contains a number of different tools which can help you to minimise this loss of quality. For example, the simple process of converting a stereo file to a mono file results in a certain loss of dynamic range. *WaveConvert*'s Maximiser and IDR can compensate for this.

You select your conversion options from pop-up menus by clicking on buttons. You can preview a file before conversion and compare it to the pre-processed version. When you're happy with the result, simply click on the **Convert** button and the deed is done. You can also select several files to process at one time.

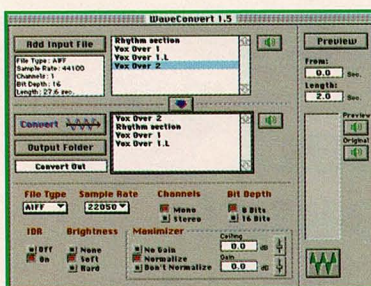
Does it work? Yes, it does, although to an extent the quality of the result obviously depends on the quality of your source material – and what you're converting from and to. However, if you have to downsample material and want to extract the maximum quality from the original recordings, this ought to be on your shopping list.

WaveConvert

MF rating 82%



TimeGuard makes sure that tracks which may have slipped out of whack due to processing are in perfect alignment.



WaveConvert has a range of functions to maximise the sound quality of your downsampled files.

Sound SuperEdit 1.0

Binari Sonori
SA £299

Binari Sonori

This is a varied selection of tools, designed to assist you in the task of automated post production of sound files. It can automatically edit, process and create and name thousands of audio files – all in one shot. It can also convert between sample rates and file formats, import sound file names and text regions, and furthermore, it can link names and text regions to sound files.

TurboMorph

Gallery Software
SA £269

Gallery Software

A high-powered batch processor which can perform high quality sample rate and bit-depth conversion, alongside simultaneous compression, into a variety of popular Mac audio file formats. Now available in PowerMac native version.

Mezzo

Grey Matter Response
SA £429

Mezzo Media Archiver £763

Mezzo Utilities £128

Mezzo Master DDP £340

Mediaspec

A sophisticated archiver and backup utility, *Mezzo* runs in the background – archiving, restoring and managing your data while you continue working. It can track multi-gigabyte projects and hundreds of files spread across a number of hard drives. All this plus an easy-to-use drag-and-drop interface.

Mezzo Media Archiver is designed for use with a whole range of digital media formats – Avid, Audio Vision, *Media Composer*, *Premiere*, *Sonic Solutions*, *Pro Tools*, and digital audio compatible sequencers such as *Logic Audio*. *Mezzo Master DDP* is professional mastering software, designed for use with Digidesign's *MasterList* CD.

VocAlign

Synchro Arts
TDM £1,169
Synchro Arts

VocAlign is a unique and neat little package which aligns the modulations of one signal to match that of another. Applica-

Contacts

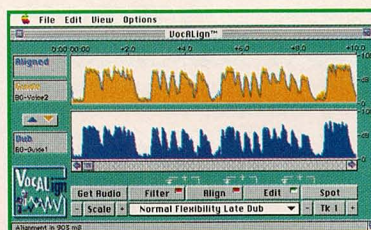
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Binari Sonori (Italy)
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Gallery Software
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Mediaspec
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tions include lip-synching dialogue, foreign dialogue replacement (dubbing) and tightening-up double-tracked backing vocals or instruments.

Operation is pretty simple and automatic. You capture your original (guide) material and then the new or replacement audio (dub), and *VocAlign* will then process the dub material to match the guide. There are, however, a number of settings you can adjust for fine tuning, should you wish to do so. The display shows how the guide has been mapped onto the dub audio and within this, you have the opportunity to select different degrees of flexibility. The program also includes *TimeMod*, a useful mono and stereo linear time compression and expansion utility.



***VocAlign* maps the modulation of one audio track onto another using highly graphic displays and an easy-to-use interface.**

Although *VocAlign* can be used in several situations, its main use is likely to be in the preparation of vocals, which is a somewhat niche market, even in the world of digital audio. As such, its specialist nature gives it a pretty tidy price tag, which will, unfortunately, limit its wider appeal.

A demo version of the program is available, though, so if you think this is the sort of function you could use, do check it out. It's very clever and certainly worth exploring.

VocAlign

MF rating 78%

Precision AudioTools

Gallery Software
SA £1,169
Gallery Software

This is an integrated system for the preparation of audio files for multimedia purposes, video games and CD-ROMs. It includes not only file management utilities, but also transfer tools, batch processors and converters.

DATStudio

Gallery Software
SA £2,408

Gallery Software

A combination of 2x Stream (a specially-modified SCSI DAT archiving system) and *DATStudio* software, this system can read and write normal audio DAT tapes to and from Mac files at double speed. It can read and write professional time code formats and includes glitch-free variable speed. It can also be used as a high performance data archiving system.

S/Link 2.1

AirWorks
SA Canadian \$275 (US\$199)

AirWorks

S/Link 2.1 converts and transfers sound files and sequences between several industry-standard formats, making it easy to transfer digital audio between systems. A well priced time-saving tool.

SST

AnTares
TDM £582
SA £582
Unity Audio

The *Spectral Shaping Tool* enables you to correct for acoustic imperfections in your speakers and listening room – and specify the desired frequency response of your audio system to achieve any individual output. You can hear every detail of your sound as though you had "ideal" speakers in a "perfect" room, or you can emulate a car interior, the front of a TV or any other listening environment.

Spectralizer

Steinberg
TDM £1299
Harman Audio

This is a sonic optimiser – the digital equivalent of an enhancer – but unlike enhancers, it does not add noise or affect the phase. It simply makes recordings sound crisper and clearer, and gives them more presence. Using 24-bit processing, it also gives your recordings a warm sound. There are mono and stereo versions, and it can even emulate an analogue enhancer.



With an easy-to-use set of controls, Steinberg's Spectralizer can enhance the quality of your digital recording.



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Adiboo: I Can Read, I Can Count!



Flower patches have to be tended and cakes must be baked – the life of a young alien is an exceptionally busy one, you know. Find out more with this great new kids' multimedia release.

Playtoons

Sierra has also produced an excellent range of storytelling CD-ROMs. Five titles in the series have been reviewed in MacFormat 35 and 37. Call Sierra on 0118 920 9111 for details.

Adiboo is not your usual happy-go-lucky youngster. Sure, he's got the baseball cap, the cute tummy poking out from his shorts – he's even got a boisterous puppy called (what else?) Pup. But he's also got ears – pointy ears. And orange skin. And his pet's got a suction pad instead of legs. Just what is in this tea?

In *I Can Read, I Can Count!*, you get the opportunity to spend as long as you want clicking, exploring, playing and generally learning, courtesy of the wealth of activities to be found in Adiboo's world.

With *Adiboo's Land* (the first of this twin pack of CD-ROMs) quickly installed, you join Adiboo and Pup in a garden like no other. Your cursor will either point (something could happen here), push at a floating button or remain passive – a rarity, since Adiboo's garden is full of characters (including robot gardener Robbytock and Bozzy Gulump, a grumpy monster) and scenarios to jump into. Soon, you'll be planting flowers, tending to vegetables and even choosing kennels and beehives. Standard point-and-click fare it would appear – but as time takes

its toll, flowers and vegetables need watering, kennels need repairing and you must return to keep Adiboo's house in order. Storytelling and responsibility are the lessons being taught to your four and five year olds here, and they're welcome lessons indeed.

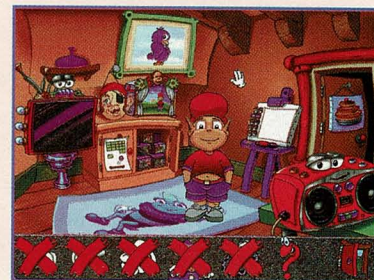


Keecook is the robo-chef who'll help you decorate your cake. Once you've finished your sponge he'll even take a photo. Say cheesecake...

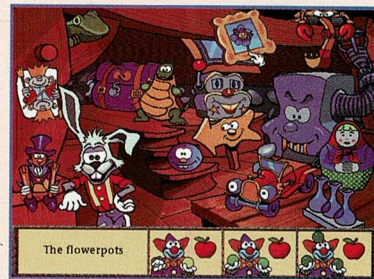
Once inside Adiboo's cottage, less pastoral exertions await. Logic and memory skills come to the fore, with creative activities on offer. Paint box packages lie behind easels, simple arcade games can be tackled and play scenes can be painted and even animated with the Construction game (based on Sierra's popular *Playtoons* series). With a ghetto blaster and cartoon-packed TV on hand, it's obviously fun – but it's the design that stands out.

Easily identifiable icons are carried over from the garden scene and your child will quickly be at ease, flicking from one activity to another. Into the kitchen and *Adiboo's* strengths combine. Yes, you can make and decorate a cake, but won't you need wheat? Back to the garden then to water your vegetable patch and harvest some ingredients. What about that tricky recipe which needs honey? Better see how the bees are and if their hive needs attending. Concepts of time are reinforced and, if all goes to plan, the birds are treated to some wheat, Bozzy gets a cake made out of chilli peppers and Adiboo's always on hand to warble saccharine congratulations.

Print out pictures of your favourite cakes, take a deserved break from all this learning with some TV, save your Paint Box creations into the Art Folder... Perfect edutainment then? Yes – but it doesn't rest there. While the rewards of the first CD-ROM were a perfect house and garden, the second (*The Land Of Knowledge*, aimed at the four-to-seven age range) takes those educational elements, divides them up into 30 activities (15 each for reading and counting) and adopts more school-centric overtones. Each game contains three difficulty levels, and while they're still fun, the promise of a diploma on completion



Whether it's the TV or the animated jigsaws, Adiboo's house is packed with clickable treats. Lucky boy.



Whether you choose the tortoise or the Russian doll, clicking around *I Can Count* conjures up 15 activities.

makes them more highbrow learning. With features like dancing aerobic robots, as well as vegetables that teach you memory skills, *The Land Of Knowledge* is the perfect extension of *Adiboo's Land*.

And after seemingly inexhaustible

National Curriculum-approved activities, *Adiboo: I Can Read, I Can Count!* can't be faulted.

A few text files wouldn't have gone amiss but the learning potential of CD-ROMs has truly been taken to the limits. Your child will reluctantly leave *Adiboo's Land* having actually learnt something while having had fun – even the slightly cloying behaviour of your

orange alien companion is balanced by some genuinely funny narration and animation.

MIKE GOLDSMITH

Adiboo

A fantastic learning adventure, packed full of activities and fun. This will keep your kids fascinated for hours.

MF rating 95%



Welcome to Adiboo's back yard, where even the vegetables are part of the fun.

Play the Portraits game and match the two figures. The bloke on the right might not be quite right just yet...



"And kick-two-three, stretch-two-three..." Give the robots a workout with *I Can Read's* matching game.



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Pop Up Greetings Card Kit

No more wise-men-on-camels or cartoons of footballers who look a bit like George Best. This new package combines multimedia and craft – so you can make your own greetings cards this year.

Every Christmas and every birthday it's the same old story. No matter how carefully you choose your greetings cards, the result is always the same: envelope ripped open, message read and understood, card discarded never to be seen again. PrintPaks wants to upset this tradition by enabling you to create your own greeting cards, using the power of your printer to the maximum.

Containing everything from a clip-art library to high-quality cards, this package gives you the templates and the tools to personalise. You can make eight pop-up greetings cards, complete with messages – and even add your own graphics, photographs and logo on the back.

After being welcomed by Max the cartoon dog, you choose from a selection of cartoon graphics and begin using the simple, but effective, tools provided to

create your design. The tools are laid out neatly across the bottom of the screen, and it's easy to save or to call for help.

Throughout the design process, Max the dog is always on call, offering spoken help. Your children, though, may need initial assistance – because although this is the most basic of art programs, it can still get a little complicated.

Once you've got to know your way around, though, it really is very easy to use. You choose your main image, save it by clicking on the **Front** button, then write your message by click-

ing on the **Inside** button and finally polish it off by adding a message on the back. When you've finished you click **Done**. And that's it. You're ready to print. No complex dragging of the mouse, no saving files in particular formats. And so long as you make sure that you've put the card in the right way, printing is simple, too. Just click **Go To**

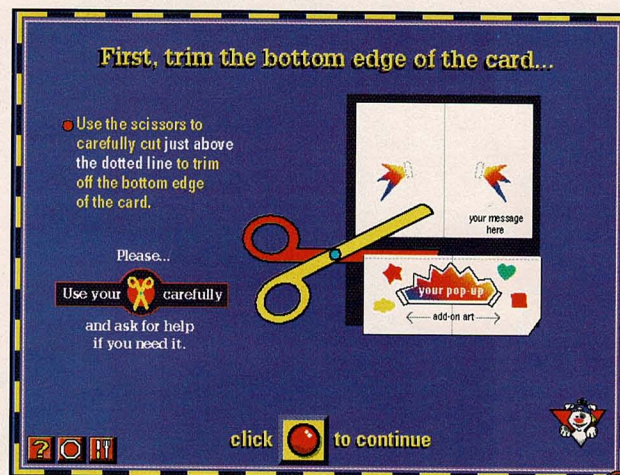
Printing and then press **Print**.

In keeping with this kid-friendly approach, however, the art provided is of the simple cartoon variety and the cards may end up looking too much like rejects from the Everything-A-Pound shop for some tastes. PrintPaks is clearly aware of this and has included a special offer that enables you to get your 35mm negatives or slides converted to PhotoCD format. You can then use these with the *Pop Up Greetings Card Kit*. Unless you are prepared to go to this trouble, the results are a disappointing mess of '70s-style pop art and double-sided tape. Perfect, then, for the kids? Well, maybe. The approach is certainly friendly, fun and simple enough to keep them amused. The clip-art is colourful and tacky enough to appeal to the sophisticated taste of your average seven-year-old, and the creative possibilities are many. But wouldn't you rather they sat down and scribbled with crayons?

GIL GILLESPIE

PrintPaks Pop-Up Greetings Card Kit

MF rating 67%



The Greetings Card Kit is so helpful, it even tells you how to use a pair of scissors. Yes, they're provided, and yes, they're plastic.

Re-ordering?

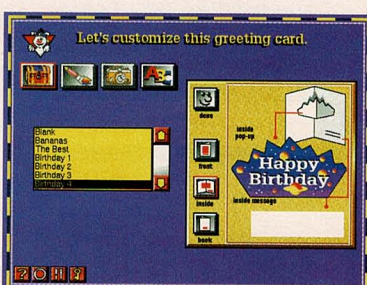
You can get refills and your free ordering kit for transferring your photos onto PhotoCD by contacting PrintPaks on 0181 876 0880 or by visiting its Internet site on <http://www.printpaks.com/>



Help is always close at hand from Max the dog. Click on his nose and he'll respond to your query.



1 First you prepare the image for the front of your card. Here, for example, we've chosen a space scene.



2 Then you choose the design for your in-card pop-up. Remember this is the exciting bit, designed to scare people!



3 Finally you can choose your own logo for the back, giving your work that professional greetings card look.



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Extras: 2x speed CD-ROM drive • any colour inkjet printer • iron • ironing board			

PrintPaks Awesome Iron-On Kit

Still cutting a dash in your brand-new "I Love The Bee Gees" T-shirt? Then why is everybody laughing? This multimedia craft program may just provide the answer – and the T-shirt – you need.

This looks like a risky idea. One of the most important concerns of any child old enough to walk and talk is to fit in, to be like other children, to avoid standing out from the crowd. If a child wants, say, a Spice Girls T-shirt, they want *the* Spice Girls T-shirt, like their friends have been wearing at school. No matter how well-intentioned it may be, they do not want a Spice Girls T-shirt that Mummy and Daddy designed on their computer at home. The *Awesome Iron-On Kit* gives you the chance to make that T-shirt – giving your kids security complexes for the rest of their lives. This, then, is a multimedia craft package with potentially devastating side-effects.

Hosted by Max, a cute little dog who for some reason has a black eye, the *Awesome Iron-On Kit* offers the complete package – from the art-program to the T-shirt, everything is in the box. Greeted by a wobbling hyper-colourful interface and appropriately loony-tune music, you are given narrated step-by-step instructions. The

latter encourage you to use the art library to first design and then print out up to four large, or 16 smaller, iron-on designs on any of the major brands of inkjet printers.

To get started on your garment, you must choose a layout – tall or wide. Next select a picture from the gallery, import your own photograph or chosen art (using PhotoCD, TIFF or PICT formats), and add text. The *PrintPaks* application will re-size your own art for you, so you don't need to worry about making it fit on the T-shirt.



Max the dog. He's your host, your narrator, your little puppy friend. He has a black eye because people keep taking offence at his T-shirts. Customisation is the name of the game, folks.

Customisation is the name of the game and the application is easy to follow, once you've read the instructions carefully. While the thought of using a photograph and choosing your own wording may seem a touch ambitious, it really is achievable in just a few easy steps.

Then comes the printing. After checking your design using ordinary paper, you can print out your masterpiece on the transfer paper provided. Then, and with much excitement, go directly to the ironing board (not provided) and iron your transfer on to the kid's T-shirt provided – or your own T-shirt, bag or denim jacket.

Or you could just go to the professionals, like a T-shirt shop. The problem with *Awesome Iron-Ons* is that although creating the design is simple, ironing it on is still a fiddly process fraught with possible dangers. There are 16 pieces of transfer paper, but some of these are inevitably going to be disasters. Moreover, the clip art provided is somewhat limiting: monsters, wacky cartoon animals, hamburgers and the like. You may find that once your child is old enough to get involved in making the design, he'll



It's the old favourite, the hamburger/Rocket from the Crypt T-shirt. Do not wear this design in front of the band.



The colourful drawings are sure to appeal to younger children.

Everything in the *Awesome Iron-Ons* package screams colour and fun. Apart from the finished results, perhaps...

have grown past the point of liking the designs the program enables you to choose from. Awesome it may be, but the *Iron-On Kit* offers a novelty that wears off all too quickly – and you'll get through a lot of T-shirts while you discover if it's a hit with your kid.

GIL GILLESPIE

PrintPaks Awesome Iron-On Kit

MF rating 63%

Kitted out

PrintPaks has other multimedia craft packages in its catalogue. These include *Party Fun Kit*, *Magnet Kit* and the *Personalized Pin-wheel Kit*.



Your young ones can become walking, talking eco-warriors with this particular design. Body Shop, eat your heart out.



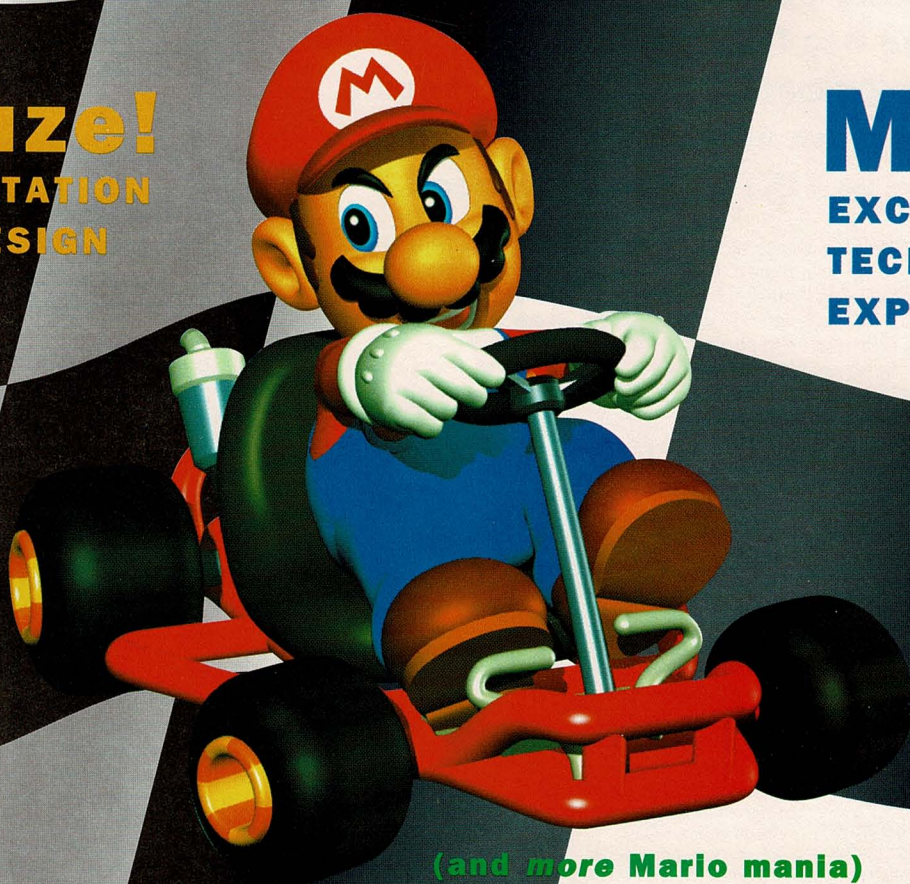
Choosing your designs couldn't be easier. Just click the box on the left and the picture appears in the box. Like, for example, an elephant on a unicycle.

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The Mystery of Magritte

MACFORMAT Classic

He's one of the most influential figures in modern art, a painter, thinker and revolutionary with a neat line in unforgettable quotes. René Magritte hits CD-ROM. Prepare to be confused.

When you think of surrealism, whose name comes into your head? Salvador Dali, right?

Wrong. The real genius of the surrealist movement is René Magritte. His impact was such that when the final history of 20th Century art is written only Picasso and Andy Warhol will stand alongside him, yet his name remains virtually unknown outside art circles. He is, as this encounter suggests, a mystery.

Born in small-town Belgium at the end of the last century, Magritte's childhood was shattered by his mother's suicide. Whether this explains the other-worldly uniqueness of his art remains unclear, but no painter before or since has seen the world through eyes like his. The unsettling canvasses which are scattered throughout this most atmospheric and original CD-ROM are like alternative entrances to the human condition. Ridiculous, unnerving, irreverent, dreamlike, tragic, unfathomable and, above all, always very strange indeed.

In keeping with the spirit of the artist, *The Mystery Of Magritte* is not merely

content with showing you the work; it wants you to ask, "Why?" Every canvas is deconstructed, scoured for meaning and sub-meaning and then relocated in the theories which inspired the man to pick up a brush in the first place. And, as you'd expect, it isn't all that easy. Rather

than attempting a simplified history-based celebration of the artist, Belgium-based producer Virtuoso has mirrored the theoretical abstraction which scratched at every part of his life and work. The biography of his family is haunting, the music sodden with eerie, lonely violin, and the cursor is in the shape of a pipe. Virtuoso clearly adores its fellow countryman and this devotion to the subject matter makes *The Mystery of Magritte* no ordinary art disc.

This is art exploration as it should be, free from traditional constraints. The program is split into six main sections and the theories, language and contradictions in the paintings are accompanied by audio clips, film footage of the man himself and an endless stream of bizarre and memorable quotations.

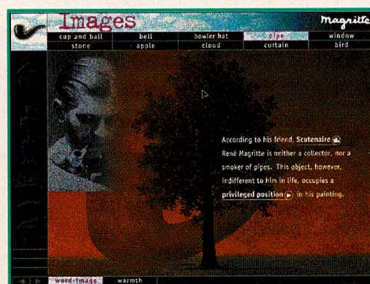
The recurring themes – Magritte's pictorial vocabulary of bells, bowler hats,



Throughout *The Mystery of Magritte*, the man himself pops up on black and white video footage.



The young Magritte worshipped the work of French author André Breton, one of the founders of surrealism.



Magritte was not particularly fond of the pipe per se, but it is an essential image in his mysterious paintings.



The Great War, another bizarrely named idea from the surrealist master.



Magritte's love of *The Fantomas* came from the character's subversive, anti-authoritarian attitude.

pipes, apples, clouds and so on – are threaded together in a section entitled "Images". Just when you think you've grasped the meaning behind their use, up pops Magritte to say, "Mystery is everything and mystery is nothing." Inspirational stuff.

Inevitably you are taken deeper and deeper into the psyche of the man, and as you descend, your appreciation grows. In Magritte's dreamscapes, perception is everything. His most famous work, *The Treachery of Images*, asks, "When is a pipe not a pipe?" The answer is when you see it as something else.

This CD makes you see Magritte for yourself. It approaches and discusses every idea with the most open of open minds, just as Magritte did and just as you must do. This makes for the finest single-artist CD-ROM ever – an inspired piece of multimedia which can claim to be art is its own right. Somewhere in a subconsciousness far away, René Magritte approves.

GIL GILLESPIE

Mystery of Magritte

An engaging and radical look at one of the world's great all-rounders. It'll make you question your very existence.

MF rating 90%

Clear cut

Throughout his career, Magritte was fascinated by the mysterious under-ground criminal "The Fantomas". Asked if he was The Fantomas, Magritte replied "I am Fantomas in some way but we can be other than ourselves in two ways". Exactly.



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Picasso

It has often been said that there is no such thing as a bad Picasso. With such high standards to emulate, does this first ever CD-ROM on the daddy of modern art live up to expectations?

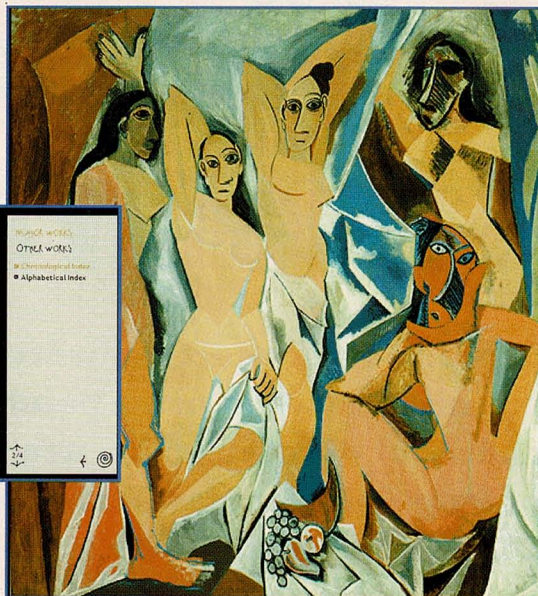
To call Pablo Picasso influential is like accusing Shakespeare of writing a couple of plays. He is the Einstein of oil on canvas, arguably the greatest artist of this or any other century. Born in Malaga in 1881, young Pablo began using brushes at the tender age of eight. By his mid-20s he had turned modern art on its head. In 1907 his painting *Les Femmes d'Alger* caused an outrage which shook the art world to its core. Cubism was born and from here on in anything was possible.

The traditional art establishment never really recovered. His ability to change and keep one step ahead of everybody else was the key to his greatness. Picasso was the ultimate chameleon.

Scrolling through the chronological index of this first ever *Picasso* CD-ROM is like watching the history of all art unfolding. It is astonishing that one man could have produced such diversity. And everything, absolutely everything, he ever touched was in a class of its own.

Featuring 600 works from 70 different museums around the world, this family-approved presentation of "the man, the works, the legend" is divided into four main sections: a guided tour, a diary of

Les Femmes d'Alger (1907) gave birth to modern art as we know it, and proves that punk ideology was around long before 1977.



The diversity of Picasso's work is breathtaking. A skim through the index reveals a multitude of styles and periods.

his life's work, the themes which influenced him and a gallery of his paintings. You begin in a gallery which houses 17 of his most significant works and can either stay and investigate these masterpieces or move on to another section. Each of these 17 paintings has a voice-over explanation and boasts considerable background depth.

As you would expect, the design and feel of the program is pure Picasso. Each section heading is in a "Picasso" font, the layout is fiery and unmistakably Mediterranean and the music ranges from the eerie minimalism of Erik Satie to wildly free-form Spanish guitar.

Of the 600 paintings here, 100 get the in-depth treatment. You can magnify, scale and learn about the composition, view slides relating to particular works and identify his recurring themes. Picasso was not content with merely being the world's most famous painter, though. He was also a sculptor – arguably the finest ever – photographer, poet and performance artist. In the "Themes" section you'll find these sidelines sharing space with his ceramics, engraving, love of bullfighting and portraits.

This latter section, though, is too shallow. Almost free of narrative and devoid of icons, it forces you to view each theme to reveal its contents. Click on "The Studios", for example, and you'll find just a handful of black-and-white photographs of Picasso in various locations around his adopted French homeland. Might it have been possible

to include a virtual tour of Picasso's studio or museum in Antibes? This is the first ever *Picasso* CD-ROM, after all. The film footage is restricted to just three short clips, too.

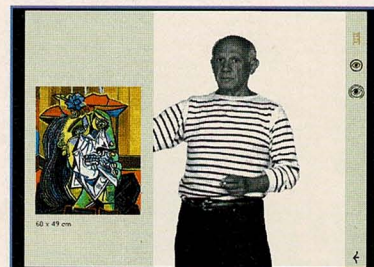
However, despite its shallowness in certain areas, there is much here to admire. The art and the man who painted it speak for themselves, of course, but the music, the perfect design of the menu screens and the sheer volume of work available for browsing make this an original must-have CD-ROM for anyone who is interested in art. The

legacy is in safe hands. **GIL GILLESPIE**

Picasso

A educational and entertaining trawl through the life and works of one of the world's greatest artists.

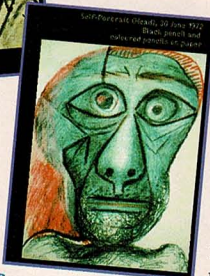
MF rating 88%



Picasso's Breton shirt – pictured here alongside the cubist masterpiece *Weeping Woman* – was the only constant in his life.

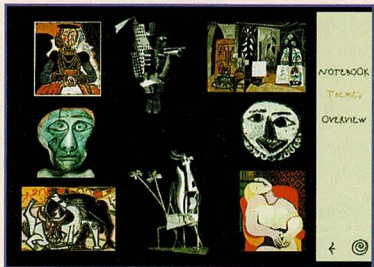


The self image of a 20th Century icon from his 20s to his 60s is explored in a whole section devoted to Picasso's portraits.



A family affair

Picasso was part-edited by his son Claude, who comments, "This highly informative and educational presentation will become a benchmark reference to my father's life and work." The great man's daughter was last seen using the family name to sell expensive perfume.



The "Themes" section includes a look at Picasso's ceramic art, use of bullfighting imagery, photography and sculpture.

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Wing Commander 3, PGA Tour Golf 3, System Shock, Super Wing Commander, Shockwave Assault, Spaceship Warlock, Wolfpack, Peter Pan, The Jungle Book Reader and Putt Putt & Fatty Bear's Activity Pack - PowerMacs only	



PRICE £39.99	ON SALE Now	CONTACT Gremlin on 0114 275 3423	WEB SITE http://www.gremlin.co.uk/
MAC PowerMac only	POWERMAC Processor: any • RAM: 8Mb (8Mb free for in-game)	REQUIRES System: 7.5.2 • HD space: 22Mb • Screen: 640 x 480	
• Colours: 256 • Extras: 2x speed CD-ROM drive			

Actua Soccer

MACFORMAT
Classic

"It's on the Mac. It's on the Mac. It's on the... Football's on the Mac." Yes, after a very long wait, a footy game has finally made it to the Macintosh. James Ashton gets over-excited...



See for yourself – check out our rolling preview

So many jokes, so many sneers and all those wasted tears, when you're down, through the years. But now we'll see a tackle by Cole, and see Ferdinand score, Shearer bouncing the ball and Gascoigne laughing. Three lions on the screen, the CD-ROM's still gleaming, 13 years of hurt never stopped us dreaming.

Forgive the emotion, but this is a truly historic moment. For almost 13 years the Macintosh – the most perfectly conceived, beautifully realised, flawless thing to come out of the 1980s – has lacked a small but important component: a football game.

Not just a good football game, a vaguely playable football game or even some highly unstable, unsavoury shareware effort. Up until this day, this red-letter moment in the glorious history of Mac gaming, the Macintosh has had *no* football game of any description. Not one. Ever. Ever, ever, ever, ever. As David Coleman said when we rang him, "It really is quite remarkable."

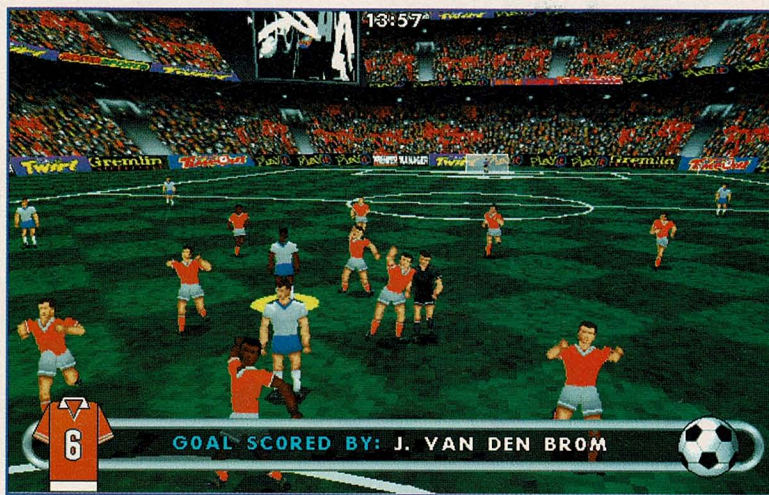
And *Actua Soccer* isn't just any old football game. Scuttling furtively onto



The tartan army defeated once again. On their home turf by the looks of things.

Stick play

We last tested joysticks in the Christmas 1995 Mac-Gamer, free with MACFORMAT. Our recommendation was the Flightstick Pro, which scored 84%. The price has since dropped to £69.95. For more details call Dimensional Services on 01844 345406.



All the players' names and statistics in *Actua Soccer* are accurate to the point where they stood about a year ago, when the game made its debut.

the Mac from the, ahem, PlayStation and the (spit!) PC, the game has already built itself an enormous reputation, beating the traditional world champion – Electronic Arts' *FIFA* – hands down. It's a full-blown, polygon-generated, official-statistic-loaded, fantasy football fest of significant proportions.

Why? Well, partly because of the beautiful presentation. The matches take place in an enormous stadium, replete with the requisite groans and roars of a fickle football crowd and a patchwork pitch of suitably World Cup standard. The players appear in accurate national strips and move with a fluid grace that oozes motion-captured accuracy, and the ball movement has passed its Physics lessons with starred "A" grades. Barry Davies delivers a commentary that fits slickly in with the action and conjures up the memory of classic *Match of the Days* past. Even the music's passable. Make no mistake, this is state-of-the-art stuff.

But it doesn't end at flash graphics and noises. *Actua's* got what every football squad needs: strength in depth. First (and certainly most important), the game is extremely playable. Using only the direction cursors and two other buttons (nominally "pass" and "shoot"), you can string together around 1,000 different moves, from diving headers to bicycle kicks and volleys. Like all good games of any type, the more you experiment, the

more there is available to find, and the more satisfying it is to show off in front of your friends. One particularly appealing innovation is the way active players are highlighted. A star around the



The players line up at the beginning of the match. They should be side-on, but you can't have everything!

player's feet means that he's in position for a good first-time touch, a flashing triangle that he's within his shooting range, and a square denotes a good crossing position. All very useful when you're one-nil down against Argentina in the 85th minute.

As far as the controls are concerned, the trickiest thing is adjusting to keyboard play, especially if you've played football games on other formats using a joystick or stick. With no dedicated "diagonal" buttons, some moves are made harder than they should be. *Actua Soccer* might be the first game to really make a joystick an essential part of your Mac gaming equipment and may be



You even get real advertising. It's just possible a deal was struck with Cadbury...

On the 'ed!

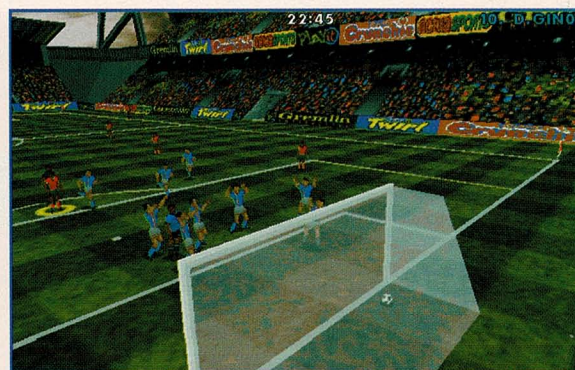
To make the motion of the players look as realistic as possible, Gremlin got some real footballers (former England goalkeeper Chris Woods among them) to come into its motion-capture studios and perform a variety of passes, shots and tackles in front of a digital camera. All the moves in the game are modelled on this information, helping make the computer players look and move as realistically as possible.



Some team members have icons beside their names. These can signify a star player or one unlikely to last a whole match.



Play with the rules of football on this screen and stroke your chin in earnest Jimmy Hill-style contemplation.



"Ooh-ah Cantona/Ginola/Paul McGrath" etc. The entire team get over-excited when you manage to score a goal.

a cue for the price of such hardware to drop to more sensible levels.

However, *Actua's* game options and back-up bits and pieces are second to none. For starters, the game can be switched between "Arcade" and "Simulation" modes. In Arcade mode, team selection (and all the teams are statistically accurate International sides) is automatic and choosing different horses for courses isn't necessary. In Simulation mode, however, you're going to be rather lost if you can't come up with a good argument for playing a sweeper system instead of a flat back four – and some players capable of following your instructions. Team selection and tactical adjustment before and during the game are vital.

Other cool fiddly bits include the Practice match, where you only play against a goal keeper. This may sound rather one-sided, and it is, but it's also an excellent opportunity to string together passing movements, unhindered by those irritatingly unhelpful opposition



The overhead camera can go along way out. In this case it's more like "Goodyear Blimp" view.

defenders, and practise the more elaborate moves.

There are player-definable friendly and league options to play in, as well as the option to adjust some of football's more annoying rules – fouls, offsides, bookings and the like – to your heart's content. You can even, if you're feeling strong, opt to play a full 90-minute Simulation game. About the only thing that's missing is the chance to win an accurate World Cup or Euro '96 championship.

The bad news, of course, is that *Actua Soccer* is a PowerMac-only game. However, that does mean any Power Mac. The 6100/66 that we first tested the game on chugged away smoothly, albeit at slightly reduced screen size and with low graphic detail. On a Umax Pulsar 405e/200, though, things were blisteringly fast and smooth.

Equally, although the packaging says *Actua Soccer* only needs a minimum of 8Mb RAM, in reality it's a lot happier with 10 or 12Mb and no Virtual or RAM Doubled memory. However, going

PowerMac-only has enabled Gremlin to release a football game of the highest calibre – it even supports 20-player network play, for goodness sake. Yes, 20 players, one for each of the outfield players and all of them running off a single copy of the game. If you've got an office network, you'd better be prepared to witness a serious drop in productivity.

Another area in which the game is let down is its documentation. The Mac addendum should be a lot more comprehensive (some kind of troubleshooting tips wouldn't go amiss) and the reprinted PC manual is full of typographic errors.

On different gaming formats where *Actua* has lots of competition, it does have its detractors. Some people find the polygon players too slow, and overall they say that *Actua* lacks the control finesse of games such as *Sensible Soccer*. None of that is going to bother you, though. If you're a footy-starved Mac gamer, *Actua Soccer* is definitely game-of-the-year material.

However, if a few more footy games appear on the Mac, the arguments might start. And just think what fun we could have then...

MF

It's love...

If football is the most meaningful thing in your life, then why not check out MACFORMAT's sister magazine *Total Football*. Also by Future Publishing, it costs £2.25 and is out every four weeks.

View! What a scorcher

On computer formats lucky enough to have a wide range of football games, spats often break out over which is "the best". Proponents of one game gather on one side of the room in one colour of anorak, and rail against another equally earnest group (in different coloured anoraks). A whistle is blown and the full-on rowing begins.

One of the major arguments about what makes a game "best" is the thistle-strewn pasture of "game view". There are a surprisingly large number of ways to visualise a football pitch and some little computer players, and people either love or hate each method with an unpredictability only matched by the passion of their opinion. Forget the United Nations, if you really want to stop a war, throw the opposing sides a bundle of footy

games and watch them regroup along totally different lines.

Fortunately for the peace-loving



The "Player" camera option is impressive, but makes it very difficult to play.

Mac user, *Actua Soccer* is an entirely polygon-based affair, so it can generate any game view you fancy. You can play from behind the goal, from the classic isometric viewpoint, from overhead, from behind the goal, from a "wire camera" (from the side of the pitch, level with the action), from behind the goal or even

from the players', referee's or fan-in-the-stand's perspective. You can also adjust the height and magnification (distance from ball) of the camera angles between wide fixed points.

Far be it from MACFORMAT to influence your viewing decisions, but the behind-the-goal, mid-angle, mid-magnification view is by far the best. And the first letters of disagreement can start... now!

Actua Soccer

A beautiful game about the beautiful game, and a superb debut performance for football on the Mac. Roll on the competition.

Graphics	93%
Sound	92%
Gameplay	89%

MF rating 90%



This is the "Wire" camera angle, taken right back out into the stand. A view for the more tactically-minded.



PRICE £45 **ON SALE** Now **CONTACT** Softline on 0181 401 1234 **WEB SITE** <http://www.softline.co.uk/>
MAC Processor: 68040 • RAM: 5Mb **POWERMAC** Processor: any • RAM: 8Mb **REQUIRES** System: 70 • HD space: 13Mb • Screen: 640 x 480 •
Colours: 256 • **Extras:** CD-ROM drive

A-10 Cuba! – Missions at Guantanamo Bay

Your mission, if you should choose to accept it, is to destroy Cuba. If you want to prove your *Top Gun*-style fighter pilot potential, then this new release gives you the chance to do so...



First of all...

...there was *A-10 Attack!* This was reviewed in MACFORMAT 28, and received a rating of 89%.

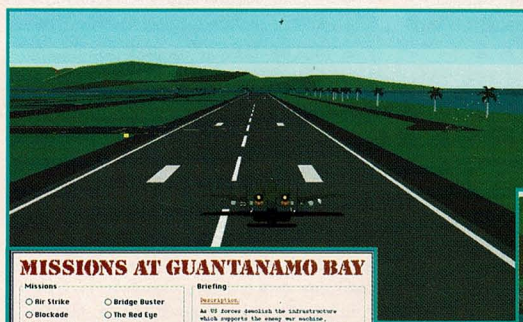
Options...

If you prefer high-altitude dogfighting to all this low-level bombing, take a look at *F/A-18 Hornet II*, which scored 93% in MACFORMAT 36, or *Flying Nightmares*, which also picked up 93%, MACFORMAT 14.

When is a mission disk not a mission disk? When it's a stand-alone flight-sim in its own right. Classic plane game *A-10 Attack!* has spawned a sequel, and unlike most flight simulator add-ons, you don't need the original game to use it. *A-10 Attack!* scored highly when we reviewed it back in MACFORMAT 28 because of its realistic graphics and physics model. It also used "solid body" physics to work out the aerodynamics of your aircraft, missiles and bombs, and had excellent graphics in every element of the game. This sequel has a lot to live up to.

Like the original game, *A-10 Cuba!* revolves around missions flown in the US Air Force's A-10 attack aircraft. The A-10 isn't a fighter, and doesn't handle like one. Its only role is to drop bombs and fire missiles at things on the ground. Thoughtfully, developer Parsoft has included 12 missions requiring you to do just this. There are no prizes for guessing that these missions take place on the island of Cuba. Exactly why the US should be required to conduct air assault missions on Cuba is never explained – either in the game or its accompanying manual – but it's possible that they're in retaliation for Gloria Estefan.

The missions can be played in any order, but the later missions are harder, so it's a good idea to play them in the order they're presented. There's a bit of everything included here – from bombing airfields, to shooting tanks, to des-



A-10 Cuba! offers you the chance to fly a dozen new missions in eastern Cuba.

troys shipping. There's even the inevitable "destroy a nuclear reactor" mission.

If you've already got *A-10 Attack!*, then *A-10 Cuba!*, shouldn't present you with too many surprises. Apart from the new missions, there is (obviously) new scenery, as well as new air bases for you to fly from. The manual boasts that the air bases conform to Federal Aviation Authority standards, and they certainly are detailed, with the right markings on the runways, and taxiways and hold points in the relevant places. It would have been nice to have had some kind of input from the control tower (as in *F/A-18 Hornet*) to tell you which runway to use and whether it's safe. The airfields in *A-10 Cuba!* are busy, and it's embarrassing if you end a successful mission by taxiing into your wing man.

Other changes from *A-10 Attack!* include a natty "lizard" camouflage scheme for the planes and a much simplified mission system. *A-10 Attack!* included a mission editor, which enabled you to tweak the parameters of the included missions, while adding navigation waypoints including extra targets and so forth. *A-10 Cuba!* has a much more conventional, "this is your mission: off you go," system. All the targets and waypoints are set, and you can just climb into the cockpit and do some damage in the name of freedom and democracy. *A-10 Attack!* purists needn't worry, however. If you've got the original game, you can use the mission editor on the *Cuba* missions, too. A word of warning here, though: present versions of *A-10 Cuba!*

Welcome to Cuba. A glorious tropical paradise, peopled with obliging moving targets.

Sinking these tankers will deprive your enemy of vital oil supplies.



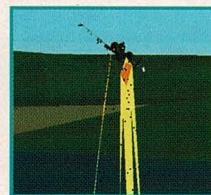
Choose your weapons from a whole bunch of high-tech nastiness.

will not work with the present version – 1.3 – of *A-10 Attack!* A patch is available from Parsoft's Web site at <http://www.parsoft.com>, but it only works with US versions of the game.

Networkable games are fashionable at present, and like its predecessor, you can play *A-10 Cuba!* over a network. Up to eight players can vie with each other in various network arenas, ranging from the mundane to the fantastic. There's even an arena in space!

A-10 Cuba! – Missions at Guantanamo Bay

Bay is a worthy sequel to *A-10 Attack!* Seasoned *A-10*-ers will welcome the new missions, scenery and slightly enhanced graphics – and new pilots will love it too. There's enough action and realism to make it instantly interesting, and the game and its high-tech weaponry can be picked up easily. Best of all, the *A-10* itself is a stable and docile



Aaargh! Jimbo piles it in again. Time to find the "eject" key, I think.

beastie, making it easy to fly and simple to land – even with a fire in one engine and a tail fin missing! If you're thinking of buying your first Mac flight simulator, *A-10 Cuba!* will prove simple to master and excellent to play. **JIM CHANDLER**

A-10 Cuba! – Missions at Guantanamo Bay

A-10 Cuba! has benefited from a general tidy up, and some interesting missions. It needs a fast Mac for best results, though.

Graphics	90%
Sound	80%
Gameplay	92%

MF rating 90%



Seasoned *A-10 Attack!* players will be instantly at home in the cockpit. It hasn't been changed for *A-10 Cuba!*



PRICE £44.99	ON SALE Now	CONTACT Interplay on 01628 423666	WEB SITE http://www.interplay.com
MAC PowerMac only	POWERMAC	Processor: any • RAM: 8Mb	REQUIRES System: 7.5 • HD space: 10Mb • Screen: 640 x 480 • Colours: 256 •
Extras: 2x speed CD-ROM drive			

Descent 2

Sequels are never easy – they're invariably either too similar to the original or so different that everything you liked the first time round has disappeared. Can this new sequel strike a happy medium?

Descent 2 is almost exactly the same as *Descent*. If you stood them next to each other and asked an impartial observer to tell the difference, you could safely bet against them finding one single variation. But take a closer look and the improvements reveal themselves.

As before, the basic concept here is that you fly through 3D mine shafts in your spacecraft, killing everything you come across while searching desperately for the "warp core". Once you've found it, you blow it to smithereens and have a time limit in which to retrace your steps to the exit. You can't accuse the plot of being complex, and the beauty of the game is that it's so refreshingly simple.

If you've never played *Descent*, then you'll be amazed at the true 3D feel of the levels. Unlike *Marathon*, you can fly anywhere you want. There is no "up" and no "down", and the labyrinthine corridors routinely open into vast unexpected caverns, laden with polygonal enemies. It often seems that the gameplay is limited to shooting, hiding and collecting – but as you progress through the levels (and move up the skill ladder), navigation, tactics and memory all come into play. You'll have a struggle avoiding

the countless mining droids and the terrifying Thief-bots, while trying desperately to follow your Guide-bot.

These two new additions, the Thief and Guide-bots, add an entirely new dimension to the game. One of the criticisms of *Descent* was that it was too hard – and the number one reason for this was the difficulty of finding your way through the complex 3D environments. You would routinely find yourself lost just after shattering the core and, as you struggled to figure out the impossible-looking 3D map, the timer would stop and you would explode, along with the mine. The Guide-bot is a very simple, and very clever, solution to that problem. At the beginning of each level, you free the little blighter, and from then on, it'll fly ahead of you, intuitively choosing the fastest route to the core, and then finding the fastest way out. If you do manage to lose it in all the frantic blasting, all you need to do is hang about for a few seconds, and it'll return to guide you through.

If the Guide-bot is the helping hand, then the Thief-bot is surely the itch you can't scratch. Meeting this little chap can cause you hours of grief, as you struggle to catch up with all the weapons he's stolen – and he does this by simply flying into you. After that, he skips town at a



The first thing that you notice about *Descent 2* is that it looks exactly the same as *Descent*. Even the monsters are familiar.

rate of knots, leaving you fuming in his wake. This is a perfect example of how Interplay has subtly tweaked *Descent*'s gameplay without tipping the scales unfairly in anyone's favour.

Graphically, it appears that little has changed, but once again a closer look reveals some subtle differences. The 800 x 600 resolution looks amazing, and all the textures – especially the water and lava sections – are particularly smooth-looking. The effects too have been improved.

Now, when you let off a few laser blasts, you can watch them illuminate the walls as they disappear into the deep gloom. It may not sound like much, but it's the kind of thing that makes *Descent 2* more than just an add-on disk.

As a sequel, you may well find that there's not quite enough new material here to warrant a purchase. The level designs are no better, nor are they any worse than *Descent*. The missions are all exactly the same, and the enemy droids are basically the same old crowd. There are a few hostages to collect here and there, and the weapons and power-ups offer little (if anything) new – but somehow this game remains as compelling as the first time you played it.

Interplay has provided much more (30 levels) of the same, while chucking in enough new facets to make it just about worthwhile for the fans. If you don't have *Descent*, then look no further than this to satisfy your trigger finger. But if you do, then ask yourself: do you really need this?

SIMON COX

Descent 2

It's not a great leap forward, but there's just enough fun here to tempt both veterans and newcomers alike.

Graphics	78%
Sound	80%
Gameplay	84%

MF rating 82%

More?

You'll be pleased to know that in between *Descent* and its sequel, Interplay released an add-on disk with 100 new levels to fly around. *Descent: Levels of the World* scored 75% in MACFORMAT 43. If you missed this issue, then turn to page 144 for further details.



Many of the robots attack in formation and will seek you out if you hide – there is no escape...

The original

We gave *Descent* 87% back in MACFORMAT 34. The game was one of the first to have a true 3D engine, enabling you to explore every corner of the environment.



Some of the tunnels are huge, maze-like in complexity and full to the brim with enemies.



(Above) This is the fate that awaits you should you venture too far into the gloom. Follow the Guide-bot or you might find yourself trapped inside a giant time-bomb.

(Left) The power-ups are just as devastating as the original – but ammunition is in short supply, so make sure you save enough of it!





PRICE £58.74	ON SALE Now	CONTACT Softline on 0181 401 1234	WEB SITE http://www.softline.co.uk/
MAC Processor: 68040 • RAM: 6Mb	POWERMAC Processor: any • RAM: 6Mb	REQUIRES System: 70 • HD space: 64.5Mb (optional) • Screen: 640 x 480 •	
Colours: 256 • Extras: 2x speed CD-ROM drive			

Marathon Infinity

The mother of all shoot-'em-ups and the best Macintosh game ever gets its third and probably final outing – but is it beginning to show its age?

Previously...

Just catching up with the trilogy? We reviewed *Marathon* in MACFORMAT 23, where it scored a Classic-award-winning 94%, and *Marathon 2* in MACFORMAT 35, where with a score of 95% it did even better.

Doomed

If you like first-person shoot-'em-ups, then you'll love *Doom*. The shareware version of the first *Doom* appeared on the MACFORMAT 33 Cover CD and the superb *Doom 2* was reviewed in MACFORMAT 31, scoring 90%. *Ultimate Doom* scored 85% in issue 34.

Marathon? Better than *Doom*. *Marathon 2*? Better than *Doom 2* – depending on who you're talking to. *Marathon 3*? Hmmm...

Yes, the stark truth is that the once mighty *Marathon*, a Mac-exclusive game that could hold its head high in the company of any game on any system, is finally showing its age. If you watch the gaming world, you'll know that *Marathon Infinity* is likely to be Bungie's last release for the alien-bursting title. The question is, is it really worth nearly £59 more?

First up, *Marathon Infinity* consists of a new 20-level scenario – and apparently there's a new story, though after reading the manual and playing the game we weren't a great deal more enlightened. Basically, you still have to run around and shoot things. There are redesigned enemies, new scenarios and some new and redesigned weapons, the most popular of which was the KKV-7 10mm SMG Flechette. Second, there are 20 additional levels, specifically optimised for network play, enabling up to eight players (two per copy of the game) to have hours of vindictive fun. Third, there are the *Marathon* editing programs *Forge* and *Anvil*, which are similar to commercial graphics programs or Net page assemblers. Both are easy to use and their comprehensive documentation will turn you from a novice into a fully-fledged dungeon master. And finally, there's a strategy guide to the monster that is *Marathon 2*.

You can run *Marathon Infinity* straight from the CD, or by installing it on your hard disk. Although installation requires



A lot of the level textures are all new, but they don't really disguise an obviously aging game.

64.5Mb, if you've got the space it does make the game run both faster and more smoothly. The game itself plays as well as ever. You still get that continuous feeling of tension that characterised the first two games – and the difficulty level is set high, in acknowledgment that if you're playing this game, you may already be an expert. And this, of course, is the game's real problem.

You see, if you've already played the first two *Marathons*, then it's more than likely that you've had just about your fill of the Pfhor (nasty aliens) and their evil ways. And if you've played the first two *Marathons* and aren't (a) lucky enough to be connected to a network or (b) rich enough to afford hours of Internet play, then half of the 40 new levels will be of no interest to you anyway.

Similarly, the game design programs included are interesting – but if you've

tired of the game, that only leaves you with a strategy guide. To a game you've already completed. Er...

On the other hand, if you're a *Marathon* addict, then *Marathon Infinity* is a gift from the gods. And if you're a *Marathon* addict with a network or Internet connection, *Marathon Infinity* is a gift from the gods with icing and a cherry on top.

But what if you're new to all this? Well, the previous titles are now available at bargain prices. They also have the advantage of leading you gently into the game, something which *Marathon Infinity* definitely doesn't. PowerMac

owners might also want to consider the likelihood of *Quake* appearing on the Mac in the new year, a game which the pundits claim will leave *Marathon* standing.

So, there's nothing very new in *Marathon Infinity*, but the first two *Marathons* were so damn-near perfect, why should there be? It all depends on how committed you are to the series – and at another £59, this might prove to be a title for enthusiasts only.

JAMES ASHTON



Flick all the switches you find. It's not always obvious what they do, but it's a good rule to follow.

Keying into the computer mainframe will often give you vital clues as to how to finish the level. Sometimes, though, it'll just give you a screen of gibberish.



The purple alien weapon is loads of fun. There's no way of knowing how much ammo it has left, though.



Marathon Infinity

As playable as ever, with some great extra stuff thrown in. Ultimately, though, it's just more of the same, and beginning to pall.

Graphics	85%
Sound	79%
Gameplay	75%

MF rating 76%



PRICE £34.99 **ON SALE** Now **CONTACT** Virgin on 0171 368 2266 **WEB SITE** <http://www.vie.co.uk>
MAC Processor: 68030 • RAM: 4Mb **POWERMAC** Processor: any • RAM: 4Mb **REQUIRES** System: 71 • Screen: 640 x 480 • Colours: 256 •
Extras: 2x speed CD-ROM drive

Lost Eden

A brand new adventure game, or an out-of-date port from systems long-dead? See for yourself as you battle to save the world from Moorkus Rex and his terrifying army of dinosaurs.

All the dinosaurs died. No one knows exactly why. The computer game dinosaurs also died. The reasons for their demise are all too clear: games like *Lost Eden*. (Stay with the dinosaur theme – it comes in again later on...)

Lost Eden, you see, was originally programmed for the 3DO (the Eleanor Rigby of games consoles), the CD-i (its doctors currently hovering nervously over the switch of its life-support machine) and the CD32 (the dried petals from its funeral wreaths already blowing carelessly in the wind). When it first appeared, over two years ago, the hope was that this *Dungeons and Dragons*-style graphic adventure was going to turn everything around and have people queuing down the street to buy a copy.

And to be fair the graphics (for the time) were pretty good. All the scenes in the game were pre-rendered and the movement between locations occurred in a smooth – almost floaty – way. On top of this, all the characters you met in the game lip-sync'ed along to – gasp! – pre-recorded speech! Gone were the days of

Dinosaurs and humans never coexisted, despite what Raquel Welch might say.

text-based adventure gaming – the future of interactive entertainment, it seemed, had arrived.

Unfortunately, there are rather large problems with the Mac version of *Lost Eden*. First, although the game was technically advanced when it first came out, the mechanics underneath that flash exterior are somewhat disappointing.

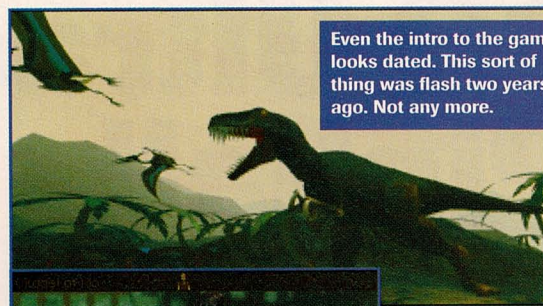
The game is a point-and click adventure in the old style, where certain tasks must be completed in a rigid order before you can move on. Plot? Here's where those dinosaurs come in again. *Lost Eden* casts you in the role of the leather-clad blonde boy Prince Adam. Your peaceful subjects in the valley of Eden are

being terrorised by the evil dinosaur Moorkus Rex. It's up to you to rally the mixed populations of humans, human-types and peaceful dinosaurs to their own defence, the ultimate aim being the

The King won't let you leave the castle, so you have to find a way to sneak out.



All of the characters speak their lines. You can also have subtitles in English, French, German and Spanish if you want.



Even the intro to the game looks dated. This sort of thing was flash two years ago. Not any more.



The palace guards aren't the best conversation in the world. A few disjointed sentences are all you can really expect from them.

elimination of Moorkus and his armies. It's a plot, Jim, but not as we know it.

The number of places you can go to and the number of people you can speak to at any one time are extremely limited, but you must speak to all the characters and visit all the areas, because if you can't solve a particular stage of the game you're stuck fast and frustrated. This discovery is rather like opening the bonnet of a new Ferrari, only to find an ordinary Ford Escort engine hidden underneath.

The other main problem is that while *Lost Eden*'s graphics might have provoked pages of praising paragraphs two years ago, stifled giggles are all they can really expect now. While the scenery might just squeeze over the acceptability barrier – albeit heavily in the shadow of *Angel Devoid*, *Buried in Time* and the other pre-renderers – the game characters and animation are only going to remind you of the Amiga and Mega Drive games of yesteryear. Just about every other adventure game reviewed in *MACFORMAT* in the past year has made a better job of character interaction and animation.

Lost Eden might have some appeal if you're still struggling to find games suitable for play at sub-Quadra level, but it's the game's dodgy underlying construction, rather than its technical limitations, that let it down. With all the new material that's coming onto the scene, the Mac isn't crying out for adventure games – conversions of old material from systems past are something it could definitely do without. **JAMES ASHTON**

Lost Eden

Dated gameplay with dated graphics. Best for *Dungeons and Dragons* die-hards.

Graphics	69%
Sound	74%
Gameplay	64%

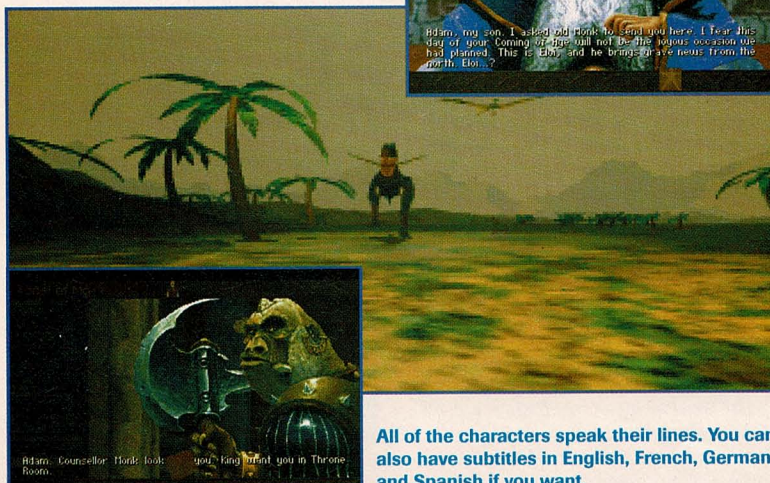
MF rating 65%



It's vital to talk to every character you meet. If you miss one vital clue, the rest of the game will be impossible.

Got a conch?

One of the first things you should do is find Old Tau – an ancient dinosaur lizard-thing who remembers the good old days. Before he dies, he'll give you a magic shell. When you get stuck in your adventure, you can consult this for hints from beyond the grave. Spooky!





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3D Ultra Pinball

- Creep Night

This latest release takes the term "pinball" in its loosest form – zombies come and run off with your ball while you're playing... What's going on?



Vanquish the dim-looking zombies by hitting them with the ball. Exciting stuff.

Pinball-tastic!

Rather better pinball offerings are in *Pinball 95*, (MACFORMAT 43, 73%) and *Ultimate Pinball – The Web* (MACFORMAT 44, 90%).

It's a funny thing. Video games seem to come and go, but pinball remains a pub perennial. It's ironic, too, that pinball should actually become a video game. Pinball – real pinball, at any rate – is somewhat tied to the same old format of yesteryear. Pinball tables are long and thin, with ingenious mechanical or magnetic doohickies to move the balls around. Suppose you weren't tied to that format, though?

3D Ultra Pinball – Creep Night is an attempt to rewrite the format of pinball, basing it on the format of a computer game. The tables, instead of being long and thin, are short and wide. Equally, the elements on the table aren't all based on physical mechanisms. Anything is possible here, from morphing effects that change the playing field, to animated characters that pick up your ball and run off with it. In short, all this game owes to real pinball is the basic concept.

As its name would suggest, the theme for *Creep Night* is the horror movie, and



The second table is the Lab, complete with squid. Every lab should have one.

The Vortex warps into being from the castle courtyard. Sinking a ball in here will give you one of several goodies, including extra balls.



its three tables reflect this theme. The first table is a castle, the second a laboratory and the third a dungeon. There's a bonus fourth table, too, but you'll have to win on all the others to reach it.

All the tables are drawn in a suitably creepy, cartoony style, which is actually quite attractive. The animated characters, in particular, are in bold block colours that wouldn't look out of place in a Hanna-Barbera cartoon. It's these characters that really make the game so different from real pinball.

Sometimes they appear as moving targets to be flattened by your ball and sometimes they point the way to bonuses. Occasionally they pick up and return your ball, and frequently they just flit about annoyingly, for no apparent reason. The game also has very rich sound, from suitably mad-cap music to sampled sound effects and voices – all with the obligatory and chilling "deep-in-the-crypt" reverb effect.

But the crux of every good pinball simulator – no matter how far-fetched – is the ball physics. We're all completely used to the way in which gravity acts on a rolling metal ball. We know how fast and how far it will roll, how far it will bounce and how it will accelerate down the table. It's this knowledge that reduces pinball to what is basically a game of accurate timing.

Knowing exactly when to flip the flipper is the real skill. It's a shame, therefore, that while *Creep Night's* ball physics are reasonable, the game is let down by being dreadfully jerky. Without smooth and predictable ball animation, the timing element is completely thrown, and the balls in *Creep Night* are anything but smooth. Whenever the game decides to load a pointless animation or sound (which it does with irritating frequency), the gameplay stops for a fraction of a second, leaving you wondering what's going on. Your ball doesn't arrive when it should, and your timing goes to pot.

3D Ultra Pinball – Creep Night is a good idea poorly executed. If you're a purist, then you'll hate the wide table format and use of animated elements – but

they're a logical way of amalgamating the venerable "hold-my-pint-it's-my-turn" game with the computer version. As long as these effects are not allowed to take over from the gameplay or get in its way, then why not? Sadly, with all its undeniably slick presentation, *Creep*



In the Castle, the goblins drive go-karts. Why? Who knows?

Night lacks the addictive gameplay of a really good table.

Games like *Ultimate Pinball – The Web* strike a far better balance, with less gimmicks, rock-solid ball physics and more interesting gameplay. *Creep Night* is fun in its own right, and its unconventional design could evolve into something interesting – but

it's just not capable of holding its own against the strong competition.

JIM

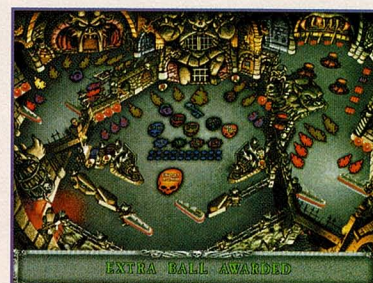
CHANDLER

3D Ultra Pinball – Creep Night

Good graphics and sound, but the game itself is dull and poorly executed.

Graphics	78%
Sound	80%
Gameplay	44%

MF rating 58%



Extra ball! A bit of a mixed blessing in this rather lacklustre game.



In the third table, the Dungeon, you return the prisoners to their cells by (surprise, surprise) hitting them with the ball. Mind you, these prisoners look like they're overdue for parole...

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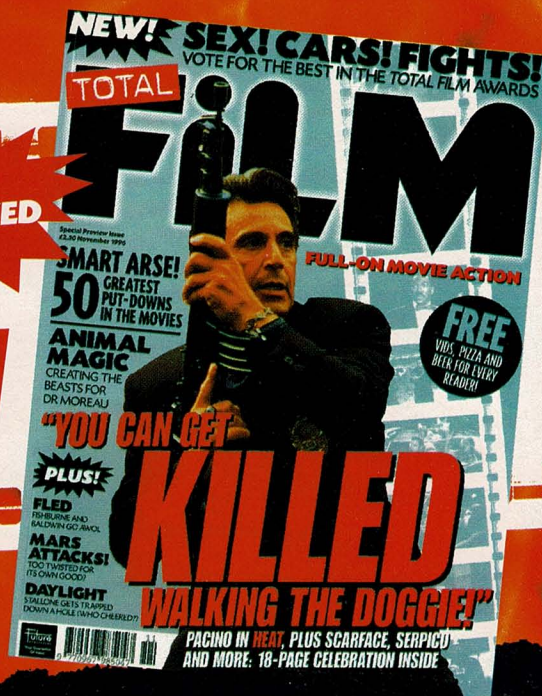
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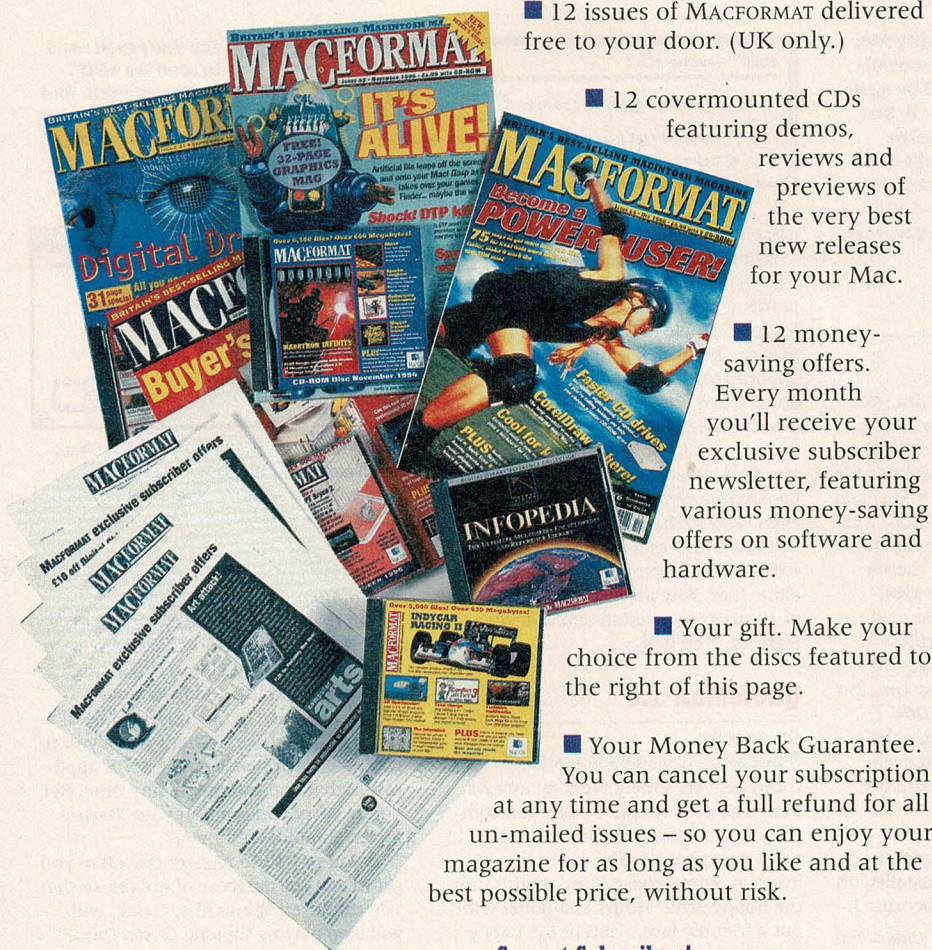
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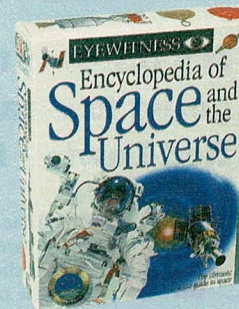
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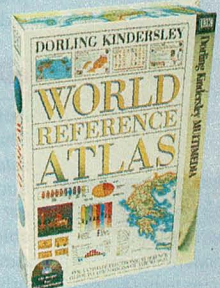
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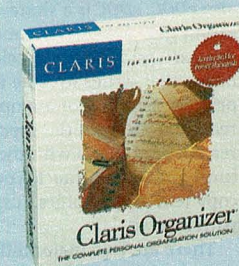
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SHAREWARE CENTRAL

It's time for the MACFORMAT shareware party! Yeah, but who's going to clear all that mess off the hard drive in the morning? Rod Lawton is our man with the rubber gloves...



Try out all of these programs on our Cover CD.

With all the quality Mac shareware now available, it should be quite possible never to buy another application. It's also quite possible that if you spent all the time needed to search out this shareware actually earning a living, you could probably afford any software you wanted. Life's strange like that.

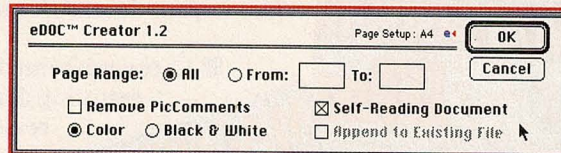
eDOC 1.2

Application
Shareware, registration fee \$25

Adobe Acrobat is a really smart idea. Any document you can print can, with Acrobat installed, be turned into a PDF (Portable Document Format) file. And this file can be viewed, edited (up to a point) and printed with the freely-distributable Acrobat Reader. Acrobat really is quite unique.

Except that it's not, because there's also eDOC. eDOC is a shareware application that does pretty much the same as Acrobat – you select a special printer driver that writes to a file instead of a printer; then you or anyone else can also read that file with the special eDOC reader. And this is with the original pictures and layout intact. You can even copy text and graphics, just as you can with Acrobat.

There are two major differences, though. eDOC relies on the recipients of its files having the right fonts installed on their systems. Acrobat doesn't, because it



You don't even need to send the eDOC reader with your files because you can set them up as stand-alone applications.

can embed the fonts in the document.

But then Acrobat can't save stand-alone documents that don't even need reader applications. If you don't mind the loss of a couple of functions, your eDOC files can be turned into stand-alone applications only about 60K larger than an ordinary eDOC file.

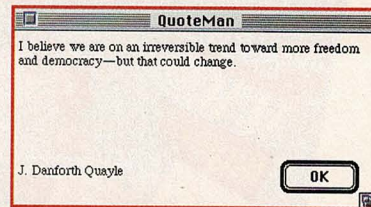
eDOC is very clever indeed. Acrobat has the edge for its polish and its industry-standard status, and it enables you to add bookmarks, thumbnail annotations and even links to the finished documents. But eDOC only costs \$25, and you can create those extremely useful stand-alone files. You also get automatic table-of-contents generation and indexing features. Nice one.

QuoteMan 1.0

Application
Shareware, registration fee \$5

It can get very lonely working away at a Mac. The only sound to keep you company is the occasional alert as you try to paste a graphic into the menu bar or insert an apple-and-custard danish into the floppy drive. Hours and hours without a friendly face... except the happy Mac icon you get when you restart your Mac after a crash. Oh, all right – minutes and minutes without a friendly face...

QuoteMan turns out to be a pleasant companion with whom to share your long hours of toil. Actually there's more than one pleasant companion, because QuoteMan draws on the musings of some of the world's greatest politicians, philosophers and smartasses to provide you with an occasional (at user-selected intervals) reminder that your sufferings with that buggy Excel macro are really rather insignificant when set against the



In QuoteMan, quotes are the intellectual equivalent of Smarties – you stuff your face with them until, rather suddenly, you never want to see one again.

ills of the world and the mystical workings of the universe.

But that's on a good day. On a bad day, you get pretty peeved by these pompous long-dead old gimmers popping windoids up in the middle of your 15-inch multi-sync, bang in the middle of a game of Crystal Quest. That's when you're glad that QuoteMan is only a 450K application that you can quit at any time. But you're sorry you put it in your Startup folder, though, aren't you?

If you pay \$5 to register QuoteMan you get to edit the database of quotes, so that you can insert things like, "Look, will you stop playing flipping Crystal Quest?"

BoringClock 4.0

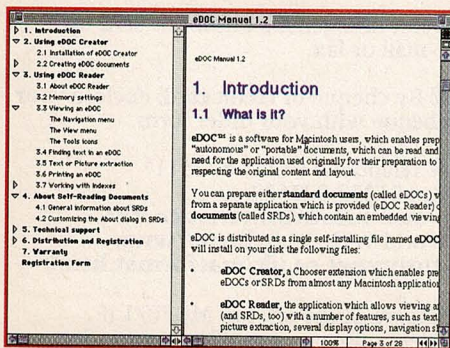
Clock
Freeware

You've got a clock on your menu bar, a clock on the mantelpiece, a wristwatch, a chronologically-obsessed DJ on the radio and people downstairs who keep banging on the ceiling and asking you if you know what time it is. The last thing you need is another Mac clock, right?

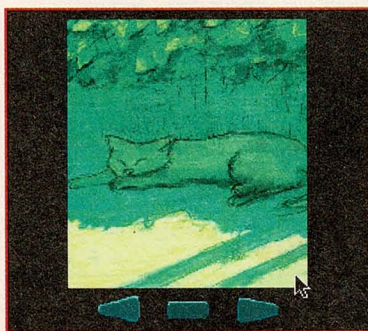
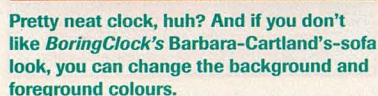
Maybe so, but this one is pretty good. It's endlessly customisable (no analogue

What?

We've got this month's margin notes from QuoteMan (see the review). We thought you'd like to share the pearls of wisdom uttered by famous people throughout the centuries.



If your document can be printed, it can be converted to an eDOC, a file anyone with the eDOC reader can open.



display like a clock face, though) and it has a timer which can count down as well as up. Best of all, though, is the way its window sits on top of all the other open windows. Okay, so you might have to move it around now and again to carry on working, but at least you don't have to go digging through 500 windows to see what time it is. But then I suppose you could always look at your watch.

Art

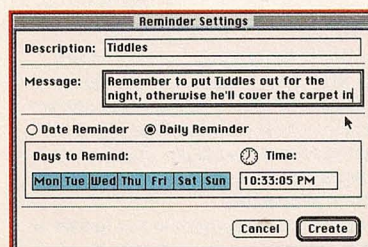
Shareware, registration fee \$10

Eij Kato lives in Tokyo and loves cats enough to paint lots of pictures of them. Some of these pictures have been built into a little stand-alone *Director* slideshow; the idea is that if you like them enough you can send the author \$10 to get these pictures at a bigger size. Now I don't know much about art, but I know what I likes – and I like these a lot.

Organiser

Shareware, registration fee \$10

No, no – I know I haven't paid the gas bill yet. But look, *Nag 1.0* is a program for storing reminders of all the jobs I've got to do... Yes, I'm sorry I didn't put the rubbish out this morning and that you had to... But you see, it comes with *Nag*



It's a medical fact that progressive loss of memory is associated with sharp pains in the neck. Maybe you need *Nag*.

Notifier, which runs invisibly in the background, popping up reminders when these jobs need doing... No, I realise I didn't call you to tell you when the fish mongers were going to deliver the hali-but... The thing is, it's pretty simple to set up reminders either on specific dates or general reminders which appear on all the days of the week or just certain ones... Yes, I know I forgot to get my suit dry-cleaned before we went paintballing with the Hodgkinsons, but I'm trying to explain that the interface is neat and quick to use – and no, I didn't remember to pack the flipping cat litter, but I *did* remember to note the time and the date when the runaway truck is going to smash through our house, leaving me tragically bereaved. No... well... I was going to mention it, of course.

Organiser

Shareware, registration fee \$25

If your life is highly complicated, and the simple drip-drip-drip reminders of *Nag* aren't sophisticated enough to keep your affairs on an even keel, *Do It All! Calendar* might just be the software you need.

It enables you to record no fewer than four different types of job. For a start, there are appointments where you set a date, a start time and an end time. These appointments turn up on the week-at-a-view scheduler. In the schedule window, you can double-click on an appointment to edit it. Trying to drag them to a new position also opens them for editing, so you simply have to adjust the times using the buttons in the window. (It was worth a try, though.)

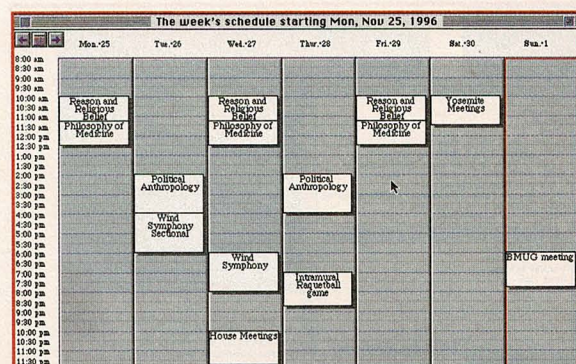
But maybe you know you've got to do something on a certain day, but there's no set time you have to do it? *Do It All!* treats these jobs as events – they turn up in a list below the relevant day in the schedule window.

You can also enter jobs which need working on right now and have a deadline some time in the future. These appear on each day's list of jobs to do. The really clever thing here is that you can assign a lower priority to begin and the highest priority for the job on its due date – the software will then gradually increase the priority of the job as the deadline approaches, moving it steadily up to the top of your to-do list.

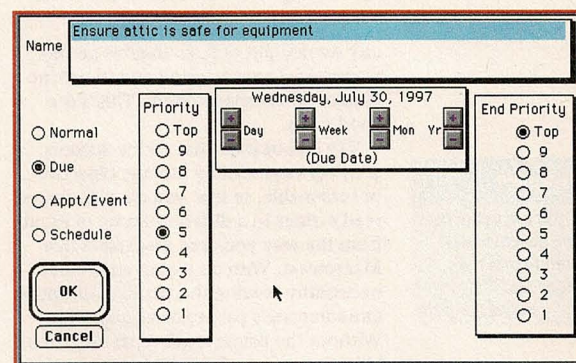
Lastly, you can enter normal jobs. These are simply things you really ought to do. There's no deadline, and you can set up whatever priority you like. These jobs just hang around on your to-do list until you either complete them or get rid of them.

Do It All! Calendar hasn't exactly got the coolest interface in the world, but it's got a better grasp of the sort of jobs people have to do and the way they arrange tasks than any commercial program I've looked at. The jobs with their deadline-based approach and escalating priority are excellent.

It's just a pity the program isn't tied in with even a basic contacts database, so that you could drag-and-drop names



With *Do It All! Calendar* you can view your jobs a week at a time, or open a separate window to find out what you've got to do today.



***Do It All's* job entry window isn't exactly a demonstration of cutting edge interface design, but it's simple enough to use.**

onto the schedule window. It's a shame too that you can't drag appointments and tasks to new positions. Tweaks like these would turn what's already a very clever personal organiser into a must-have.

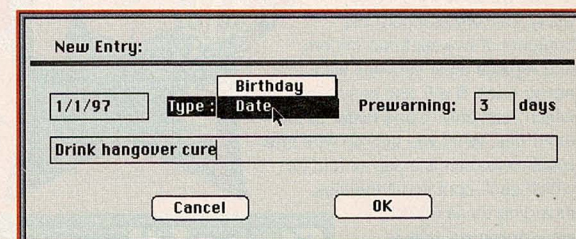
Organiser

Postcardware

Compared to the complexities of *Do It All!*, *Calendar, Reminder* is a pipsqueak. It's a titchy little program that just asks you to insert a brief description of the event, the date it occurs and how much warning (in days) you want beforehand. And it could quite possibly be useful to someone. Somewhere. Hell – it's free.

**E-zine
Freeware**

Freely-distributable e-zines, or fanzines if you like, are generally written and produced by enthusiasts and reflect their own special interests. They don't make



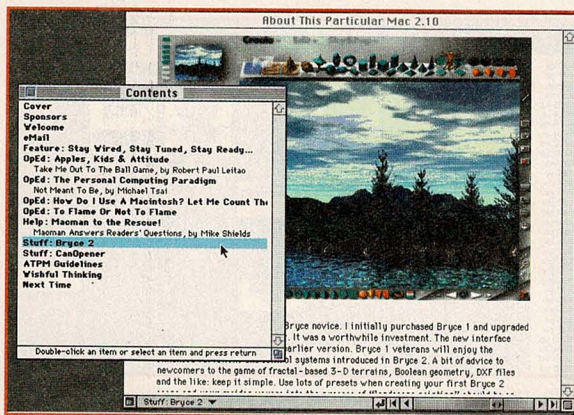
Reminder is useful for reminding you to send a postcard to the author telling him how useful you found it.

Just the once

Try everything once except incest and folk dancing.
Thomas Beacham

Shorty!

Why is "abbrevia-
tion" such a long
word? *Anon*



About This Particular Mac is a gung-ho Mac e-zine with a bit too much drum-banging, but a good deal of class too.

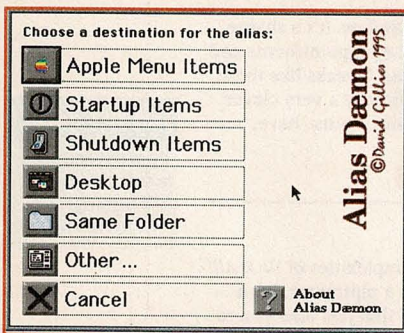
any money out of it, so they've got no commercial axes to grind and there's no blatant advertorial content. That's the good news.

The bad news is that e-zine authors aren't always terribly literate, objective or reasonable, so that you should always read e-zines in a different frame of mind from the way you read magazines like MACFORMAT. With an e-zine you're not necessarily reading the "truth", but more like someone's particular version of it. Without the commercial, legal and circulation pressures of newsstand magazine publishing, you tend not to get the quality... Of course the lack of editorial

Snapper

If you live in the river you should make friends with the crocodile.

Punjabi proverb



Hold down the [option] key as you create an alias, and Alias Daemon will enable you to decide where you're going to save it.

restrictions is what can make some e-zines such fun.

Those are comments about e-zines in general. They don't apply to this one in particular. *About This Particular Mac* is very neatly presented, it's written to a professional standard and it contains interesting articles and insights.

It's a bit gung-ho about Apple (my computer's better than yours) and at times it reads like a corporate report, but the reviews are well written and illustrated with full-colour screenshots.

Not bad at all, especially since it's free.

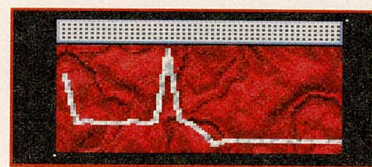
Alias Daemon 1.0

Utility

Shareware, registration fee £3

Aliases are one of the cleverest things to come out of System 7. However, they're created in the same folder as the original was in, so you've got to manually drag them to their new location, which can involve lots of tedious window opening and shutting. You've probably got to rename them, too, unless you like having the word "alias" tacked on to the ends of all your filenames.

Alias Daemon makes it all a lot easier. It's a System Extension which intercepts



Aha, so that's what my processor's been doing! *CPU-View* is very... informative.

the **Make Alias** command, then pops up a dialogue which enables you to choose where the newly-created alias is to be saved. There are default options for the **Apple Menu Items** folder and the Desktop, but you can also choose your own destination. Neat.

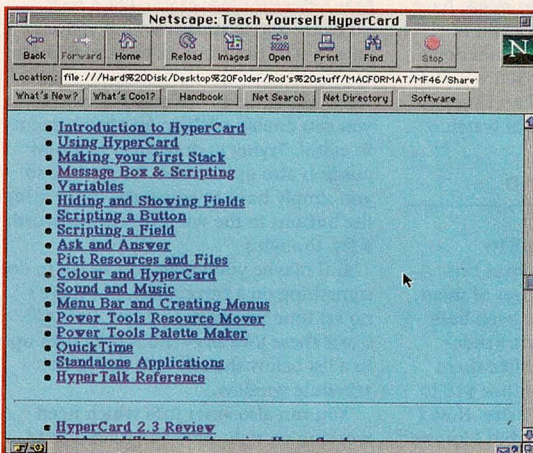
CPU-View 1.1

Utility

Freeware

Ever wondered what your CPU is doing as you work away at your Mac? Well, *CPU-View*'s little window will tell you, displaying reassuring spikes every time you swap applications and feeble little bumps as you tap away at the keyboard. Which is probably what you might expect. Umm... yes. Even the author admits it's useless.

Teach Yourself HyperCard: what looks like a formless mass of files turns out to be a neatly linked *HyperCard* manual in HTML form.



Synchronise

Utility

Freeware/shareware, registration fee \$29.95

Do you use more than one Macintosh, say one at the office and one at home? And do you often take work home and then bring it back to the office in the morning? And if so, have you ever accidentally replaced newer files with older ones? Exactly.

You can get round this by using a synchronisation utility. This will compare the contents of two separate folders and replace older versions with newer ones. It will also copy items which exist only in one folder to the other one. What you end up with after synchronisation is a pair of folders which each contain all the files, including those which were previously only in one or the other, and



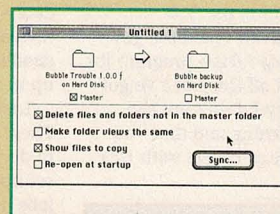
Star of the month

these will also be the very latest versions.

Synchronize is also a pretty good way of backing up your important files. You can configure the synchronisation process so that it only works one way – you set the folder to be backed up as the "master", which means that none of its files can be overwritten

with newer versions. You can also get the program to delete files in the back-up that you no longer have in the original, which will stop it from getting steadily bigger.

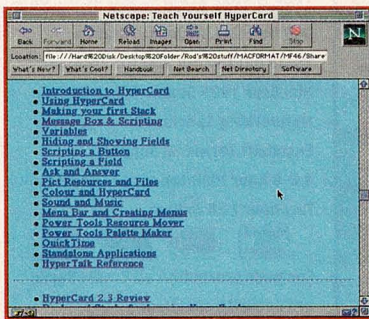
The folders and settings you choose can be saved as a double-clickable file for using again and again. There are too many further options to explain here, but this is a very effective synchronisation and back-up program and it's abso-



If you ever take work home with you, *Synchronize* is the program that will help make sure you keep your files up-to-date.

lutely free, despite being a commercial program. How come? Well, if you register, you get lots more goodies – like the ability to have your Mac connect to a remote server in the middle of the night and do all its synchronisation while you're tucked up in bed (any necessary user names and passwords can be entered in advance).

Whether you want to synchronise two folders on two separate machines or you want to back up your important files regularly with minimum fuss, *Synchronize* is a program you really ought to try.



Teach Yourself HyperCard is an excellent reference source even if you don't know a handler from a hole in the ground.

Finder Options 1.0

Utilities Freeware

Newer versions of the Finder contain a couple of tricks that aren't actually used in the Mac interface, but this little Finder-enhancing Control Panel takes advantage of them.

For example, you can forget about the clunky and slow alias-creation method used by the standard Finder – now you can simply press **[control]** and drag Finder icons to new locations to create an alias. And on the subject of aliases, you can find an alias's original item by choosing a new option in the **File** menu, choosing **Get Info** and using that window. Lastly – and arguably most usefully – you can press **[command] [delete]** to send an item to the **Wastebasket** without having to move lots of windows out of the way to drag it when the **Wastebasket** is hidden. That's the theory, anyway – it didn't seem to want to work for me.

Finder Options also enables you to tinker about with two other Finder characteristics – you can switch off the zooming effect you get when windows are opened, and you can switch off the translucent icons you get when dragging objects in newer versions of the Finder.

Why? Well, um – look, you can do it if you want, okay?

The two alias-enhancing options are useful if you've built your folder/file structure around the things, but for me the **[command] [delete]** option would be the biggest time-saver if it was more reliable. Still, not bad.

Teach Yourself HyperCard

Reference Freeware

This one starts off a bit of a mystery. You get a whole folderful of other folders, each packed with GIF images and text files. Ah, but the text files have the .html extension, so if we load up a Web browser and try to open one of them... lo and behold, we have a *HyperCard* manual built out of interlinked Web pages.

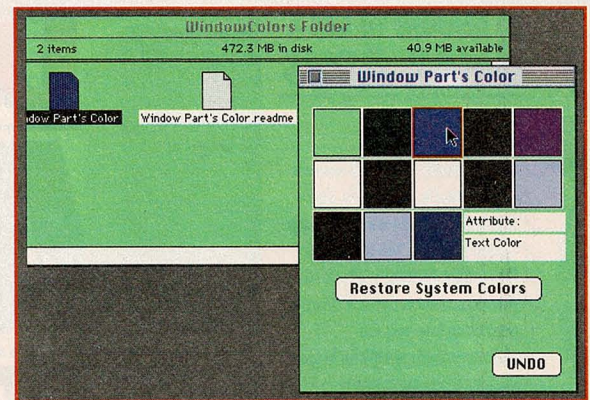
It's very good, too. The style is concise but friendly, and it covers everything from *HyperCard* basics to *HyperTalk* scripting. It's illustrated throughout with screen shots and diagrams.

If you've got *HyperCard*, but no documentation and little idea what you can do with it, *Teach Yourself HyperCard* is an excellent place to start.

We're assuming that *Teach Yourself HyperCard* is freeware – despite all those text files there's no Read Me file with it,



Easier aliases and dynamic deleting with the neat Finder Options.



Surely we can come up with a better colour combination for Finder windows? Can't we? Try out your ideas with Windows Parts Colour.

so there's no way of knowing. If anyone wants to tell us otherwise, please get in touch. In the meantime, if you've got the faintest interest in *HyperCard*, this will kindle it.

Window Parts Colour

Finder enhancer Freeware

Finder windows are pretty dull, aren't they? No, they are. That white background is elegant enough, but it's not very interesting. And that black text in the title bar would look much better in a kind of nocturnal ultramarine, coupled with a nice flushed cerise backdrop...

We digress. The point is that *Window Parts Colour* is a little application that enables you to change all that. You can choose custom colours for window backgrounds, borders, titles and so on, and see the effect immediately.

Unfortunately, it only lasts until you restart your Mac, but if the author gets enough positive feedback he'll consider turning it into a System Extension so that your customised colours can survive a restart.

I tried the ultramarine and cerise and... we're back with the defaults. **MF**

Drowning

If a synchronised swimmer drowns – do the others have to drown too? *Anon*

End!

A conclusion is simply the place where you got tired of thinking. *Anon*

HAND 14

E-zine Freeware

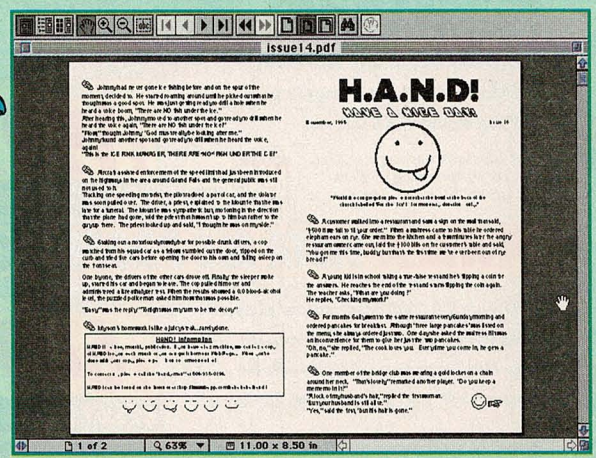
A motorist confessed to a farmer: "Unfortunately I've run over your rooster – but I'll replace it, of course." "Okay," said the farmer, "Then be here tomorrow morning at four o'clock sharp."

That was one of the better jokes from issue 14 of *HAND* (*Have A Nice Day*). You could best describe it as being a sort of humorous freesheet from a well-meaning joke collector in the States. The freeware version is an *Acrobat* file, so you need *Acrobat Reader* to be able to read the jokes (it's on our Cover CD). If you've got an Internet account you can pop over to the Website at <http://www.bapp.com/hahahaha/hand/>

Meanwhile, Uncle Bob was dining in an expensive restaurant. The waiter came over and inquired, "How did you find your steak, sir?" He replied, "Purely by accident. I moved the potatoes and the peas, and Voila! There it was."



In the bin



Have A Nice Day is kind of an on-line Bob Monkhouse. Good grief, what a terrifying thought.

Jigsaw

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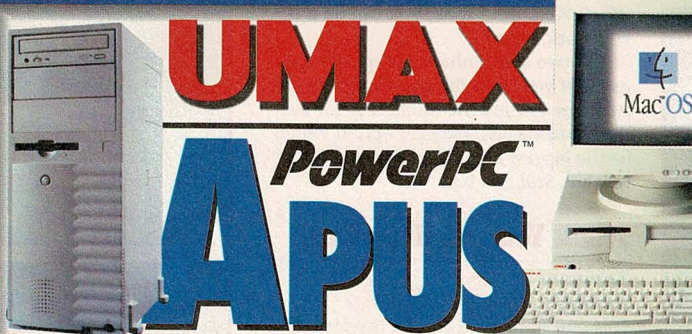
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Microsoft Office

Apple's research found it was the integrated suite that most business users bought to run on PowerMacs, so it's now bundled with some models. But is *Microsoft Office* really a wise choice? Rod Lawton takes another look.

When you buy an integrated suite, you generally expect to get a word processor, a spreadsheet, a database and a drawing package. You certainly do in *ClarisWorks*. Yet despite possessing two, possibly three, of the market's most respected applications, *Office* nearly falls at this first hurdle.

Database software? Only if you count the minimal data-handling functions built into *Microsoft Word*, or the rather better database tools in *Excel*. But *Excel* doesn't offer relational data handling and can only muster the most basic of forms for data input and browsing, despite its behind-the-scenes power.

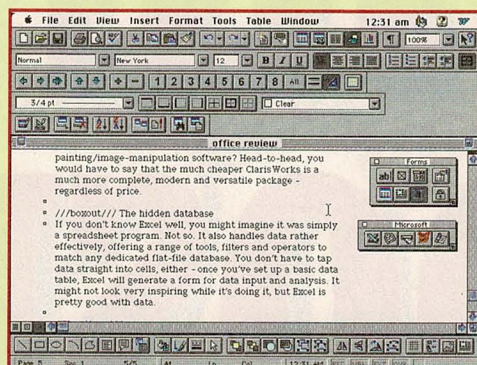
Drawing tools too are noticeably thin on the ground. They come in the form of *Microsoft Draw*, a "programette" bundled with *Office*. By current standards, *Draw* is pretty puny. However, for word processing, number crunching and presentations, *Microsoft Office* has a trio of seriously powerful applications.

A word in your ear

Word has been around for a long time on the Mac, and in all that time it has been regarded as a benchmark for the rest. Something happened, though, between version 4, which could run in 512K of RAM, and this latest version – 6 – which gobbles up a worrying 3Mb.

Perhaps "gobble" is the wrong word. When you launch it, *Word* doesn't so much "gobble" RAM as slowly sequester it. On our 6200 it took 60 seconds to haul itself into life. This is not a program for jotting down quick notes.

Once it's running, though, *Word*



Microsoft loves toolbars. Here are just some of them, and you can build more of your own. What a pity the document window takes up so much space...

offers a truly formidable array of tools, which enable you to write better prose, more quickly and logically. If you can't spell, its spell-checker will teach you. If you can't find the right word, its thesaurus will suggest it. If you can't work out how to format your finished text, *Word* can do it automatically. It can also correct common typing mistakes, make sure sentences start with capitals, and tell you when you're being too wordy or using too many clichés.

It can save you time, too. You can record sequences of actions as macros and store them for future use. You can leave bookmarks in the text and return to them at will. You can define **AutoCorrect** and **AutoText** substitutions so that when you type *xa*, for example, *Word* will duly substitute "Citröen Xantia" – and you can insert graphics and tables this way, as well as text. One of its best features, though, is its **Outline** view, which enables you to construct your work as a hierarchy of ideas and topics, developing a structure at the same time as you develop the content.

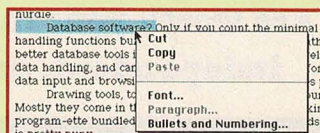
Word is every bit as adept at out-putting text as it is at helping you to input it. You can create complex tables with ease, using a grid of cells to hold the information rather than struggling with tabs. It can also create multi-layered lists in a variety of formats. You can include graphics, too, although here *Word* starts to get a little creaky – it's the

perfect example of how printing both text and graphics does not a DTP program make.

Word relies on an arcane and convoluted system of frames and anchors to create magazine-style layouts, and while this might make perfect sense to a *Word* devotee, any Mac user accustomed to the brilliant simplicity of *ClarisWorks* (or even *QuarkXPress*)

will find *Word's* layout tools positively Byzantine.

However, *Word* is the sort of application that companies buy into in a big way. It's no coincidence that this suite is called "Office", because that is precisely the market it – and especially *Word* – is aimed at.



Use a [Control]-click to bring up the context-sensitive shortcut menus.

Word has a vast armoury of tools for circulating documents among co-workers for revision, editing and co-authoring. Your colleagues can annotate your text with their own observations and make revisions which will be visible alongside the original copy.

You can even create on-line forms, complete with fields for data entry and macros which lead users through the filling-in procedure. *Word* is a seriously corporate work-grouping product, and although you'll find it pretty handy for bashing out lots of competent copy, if you don't work in a corporate environ-

ment, you'll also find it has a lot of excess baggage.

Complex numbers

Excel 5 is the only spreadsheet application on the Macintosh that's both capable of corporate-level work and simple enough to use at home. If anyone wants to try to topple it from its perch, they have to contend with a feature list a mile long.

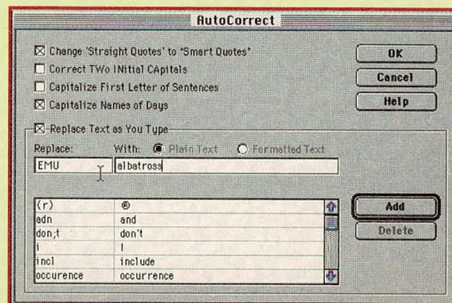
Excel works like any other spreadsheet on a basic level, but when you get into serious corporate (again) finance, sales and data handling it really starts to stretch its legs. For a start, an *Excel* file contains not just one grid of cells but many, organised into "workbooks", adding another dimension to your data and enabling you to store lots of related and linked information in a single file – including charts. It also enables you to link cells to completely separate files, too.

Just because *Excel* is big, though, doesn't mean it can't be friendly. You can assign names to cells or ranges of cells and refer to them with formulae which don't look like a language spoken by aliens. For example, the formula =d6-e4/a1 could become =monthly revenue-annual overheads/months in the year.

And *Excel* has lots of tools for making sense of the vast amount of data it can comfortably accommodate. For example, you can use **Pivot Tables** to quickly summarise large tables of sales data and find out the total number of products sold by each salesperson, or the



Office Manager turns out to be a rather puny customisable menu which appears on your menu bar.



Word's AutoCorrect feature can save you lots of time and enable you to avoid common mistakes.



total sales value in a given quarter. It also has **Consolidation** tools for drawing together and summarising data from different sources and areas on your worksheets. And there are **Outlining** tools, which work in a similar way to *Word's* – in this case, end users can either view summarised data or progressively expand the outline to examine the information in detail.

Excel has powerful analysis tools, too. "What-if?" scenarios are easy to assess using Data Tables which *Excel* creates automatically when you change one or more of your variables. If you're trying to home

you start probing beneath the surface you can dramatically enhance your automation and even create your own custom applications.

Get to the point

Most people use word processing software, and many use a spreadsheet, but a comparatively small number will need a presentation package. Nevertheless, in the business market that Microsoft is targeting with *Office*, presentations are a part of everyday life, and *PowerPoint 4.0* is a quick and effective tool for creating them.

PowerPoint presentations are made up of a sequence of individual slides which can contain both text and graphics. They can be turned into colour or black-and-white overheads, 35mm slides (you need a bureau with the appropriate equipment for this) or run as an on-screen presentation.

You can organise the slideshow and edit the detail on each

slide more or less simultaneously, because there are five "views" which you can switch between. You can edit individual slides in **Slide** view, the structure of your presentation can be assessed in **Outline** view, you can juggle the

your audience and notes to help you pace the slideshow and keep track of any additional background information.

The slide layout tools do everything you could possibly want. You can cut, copy, rotate, resize, move, stack, flip and align objects and change the line, fill and shadow. You can use the built-in drawing tools, import clip art or photos and use the *WordArt* utility for fancy text effects, too.

There are applications in existence which offer better animation and transitions, and produce slicker results, but none offers a better mix of features and direct usability. For the market it's aimed at, *PowerPoint* could hardly be improved upon.

All together now

These applications might be good performers on their own, but how well do they integrate? *Office* uses Microsoft's own OLE (Object Linking and Embedding) technology to enable you to drag *Excel* cells, for example, into a *Word* document. The link to the original application is live, so although the embedded data remains part of the *Word* file, you edit it using *Excel*.

Alternatively, you can link data so that changing the source data will automatically update it in all linked documents. It's rather like the Mac's own Publish and Subscribe system, but without the intermediate **Edition** file.

The whole OLE system is regarded with a mixture of awe and deep mistrust in the PC world (by those who know of it and those who use it, respectively), but the Mac implementation may prove to be much more bulletproof. It could happen.

All three applications look and feel like part of the same family, and the integration works well. You can convert a *Word* outline, for instance, into the skeleton of a *PowerPoint* presentation in an instant. The complexity of the three programs is overcome quite effectively by ever-present Wizards that ask you questions about what you want to do, then go off and do it for you.



Can't choose a "look" for your presentation? Let *Office* make a few suggestions...

The whole lot is tied together by the rather disappointing *Office Manager*. This is a new menu which appears on your menu bar and offers quick access to *Office* applications and the Help system, plus any other applications and documents you care to define. Sorry, Microsoft, but there are 1,001 more powerful custom menu utilities out there in sharewareland, all of which could do this job better.

So does biggest mean best? *Microsoft Office* is the most expensive integrated suite you can get for your Mac, and it is packed with features, but that means a substantial investment of time to learn it as well as money to buy it. It is a real RAM-guzzler and notoriously slow on the Mac. It is designed very much for office workers in a controlled, organised office environment. If you work mostly on your own, it's a real possibility that many of its features are wasted.

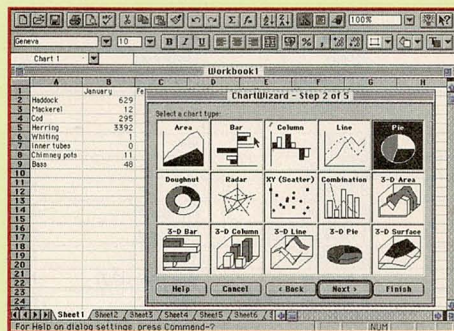
There are substantial gaps in its armoury, too. Where's the database program? Where's the drawing package? What about painting and image-manipulation software? Head to head, the much cheaper *ClarisWorks* is a more complete, modern and versatile package – regardless of price. Still, for office tasks, and especially for free in a bundle with a PowerMac 7600, you have to admit that it's spot on.

Microsoft Office 4.2

A colossal powerhouse in all senses, but expensive, aimed at corporate office users, and with some surprising gaps that despite the Wizards and templates are often hard to figure out.

Features	75%
Ease of use	70%
Documentation	78%
Value for money	69%

MF rating 73%

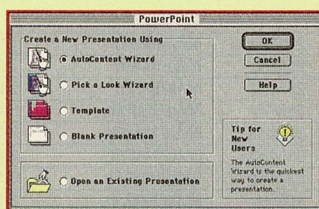


Excel offers professional-level data analysis and forecasting tools, capable of running a whole corporation. Nice if you are in fact running one...

in on a single solution then you can use *Excel's* **Goal Seek** function, or the more complex **Solver**, once you've identified the variables and constraints. For example, you might be trying to produce a magazine to a deadline, and having to balance staff overtime costs and higher "rush-job" fees against the printer's penalty charges. *Excel* will assist you in finding the solution which leaves the smallest dent in your budget.

Errors can cause mayhem in highly complex spreadsheets. They are often difficult to track down, but *Excel's* audit tools enable you to put them right. They identify the cells that are used in formulae (precedents) and those which rely on values in other cells (dependents), and help you follow the links between them.

Lastly, *Excel's* macro function is a bit special too, because it's based on an implementation of Microsoft's *Visual Basic* programming language. You need never learn a line of code to create an *Excel* macro, but once



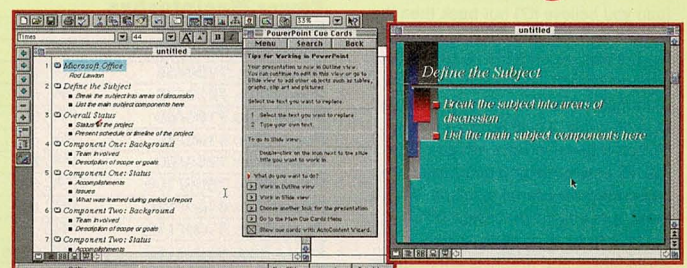
Office makes extensive use of Wizards – automated "talk-through" sequences, which guide you to the result you want.

order of your slides in **Slide Sorter** view, write notes for yourself in **Notes** view, and finally, you can check the way the presentation runs in **Slideshow** view. What's particularly clever is that you can simultaneously create the presentation itself, printed handouts for

The hidden database

If you don't know *Excel* well, you might imagine it is simply a spreadsheet program. Not so. It also handles data rather effectively, offering you a range of tools, filters and operators to match any dedicated flat-file database. You don't have to tap

data straight into cells, either – once you've set up a basic data table, *Excel* will generate you a custom form for data input and analysis. It might not look very inspiring while it's doing it, but *Excel* is as good as you'll get for spreadsheet data handling.



Presentations couldn't be easier with *Microsoft Office*. It will give you ideas about the best thing to say in your slides.



Mac Facts explained

68LC040: a variation of the 68040 processor, which lacks the FPU component its relative enjoys.

FPU: the Floating Point Unit speeds up complex maths calculations – useful for 3D for example.

MHz: a processor's megahertz rating gives an indication of its speed, but the type of processor is equally important when you're comparing models.

NuBus: the Mac's traditional expansion slot. Outdated now, but there are still plenty of cards available.

PCI: Peripheral Component Interconnect is the expansion standard that's replaced NuBus – faster, cheaper (on the whole) and not likely to become redundant in the near future.

PC Card: formerly known as PCMCIA, it's the industry-standard expansion slot for portables. Lots of options.

PDS: the Processor Direct Slot is often used to upgrade your Mac's processor, but you can get other types of card too.

PPC: PowerPC is the standard processor for all Macs nowadays. Broadly speaking, the 604e is the fastest, with the 604, 601, 603e and 603 trailing it – but compare those MHz ratings too.

Mac IIci



Many people regard the Mac IIci as the peak of evolution of the 68030-based Mac II range. Introduced in September 1989, it was the first modular Mac to offer built-in 256-colour support, and it remained in production until February 1993. With its processor running at a then-cracking speed of 25MHz, it was outperformed only by the much more expensive Mac IIfx and Mac IIfx (which did offer a whopping six NuBus expansion slots plus one PDS slot for good measure, but cost over five grand!).

The IIci was not only affordable, but was also highly expandable. The base model came with only 1Mb of RAM (can you believe it?) but back then the System could fit into 500K or so, and the IIci was expandable up to a maximum of 128Mb, which is much more than most people would ever need to fit even today. It also boasted three NuBus expansion slots, which made the IIci a versatile and potentially very powerful professional machine. What's more, a maths co-processor (FPU) made light work of maths-heavy spreadsheet and graphics applications. Cost new: around £4,000. Today, a still desirable second-hand bargain.

Mac Facts

What processor is in your Mac? How much RAM can you add? With so many models over the years, it can be hard to keep track. Whether you want to know if you can use a program we've

reviewed this issue or need to know what upgrades you can fit, our complete table of every Mac model ever should help. Current models are coloured blue-green – see MACFORMAT 42 for tests of many models.

Model	Processor	Speed	RAM/Max RAM	Expansion	FPU	Price
Compact Macs						
Mac 128K	68000	8MHz	128K/not exp	None	No	N/A
Mac 512K	68000	8MHz	512K/not exp	None	No	N/A
Mac Plus	68000	8MHz	1Mb/4Mb	None	No	N/A
Mac SE	68000	8MHz	1Mb/4Mb	1 PDS	No	N/A
Mac Classic	68000	8MHz	1Mb/4Mb	None	No	N/A
Mac SE/30	68030	16MHz	1Mb/128Mb	1 PDS	Yes	N/A
Classic II (= Performa 200)	68030	16MHz	2Mb/10Mb	None	Optional	N/A
Color Classic	68030	16MHz	2Mb/10Mb	1 LC-PDS	Optional	N/A
Mac II Series						
Mac II	68020	16MHz	1Mb/68Mb	6 NuBus	Yes	N/A
Mac IIfx	68030	16MHz	1Mb/128Mb	6 NuBus	Yes	N/A
Mac IIfx	68030	16MHz	1Mb/128Mb	3 NuBus	Yes	N/A
Mac IIfx	68030	16MHz	4Mb/68Mb	3 NuBus	Optional	N/A
Mac IIfx	68030	20MHz	1Mb/65Mb	1 NuBus/PDS	Optional	N/A
Mac IIfx	68030	25MHz	1Mb/128Mb	3 NuBus	Yes	N/A
Mac IIfx (= Performa 600)	68030	32MHz	4Mb/68Mb	3 NuBus	Yes (not 600)	N/A
Mac IIfx	68030	40MHz	1Mb/128Mb	6 NuBus, 1 PDS	Yes	N/A
LCs						
Mac LC	68020	16MHz	2Mb/10Mb	1 LC-PDS	Optional	N/A
Mac LC II (= Performa 400)	68030	16MHz	4Mb/10Mb	1 LC-PDS	Third-party	N/A
Mac LC III (= Performa 450)	68030	25MHz	4Mb/36Mb	1 LC-PDS	Optional	N/A
Performas (non-PowerPC)						
Performa 475 (= LC475)	68LC040	25MHz	4Mb/36Mb	1 LC-PDS	Upgrade	N/A
Performa 630 (= LC630)	68LC040	33MHz	4Mb/36Mb	1 LC-PDS	Upgrade	N/A
Centris series						
Centris 610	68LC040	20MHz	4Mb/68Mb	1 NuBus/PDS	Upgrade	N/A
Centris 650	68040	25MHz	4Mb/136Mb	3 NuBus, 1 PDS	Yes	N/A
Quadra series						
Quadra 610	68040	25MHz	4Mb/68Mb	1 NuBus/PDS	Yes	N/A
Quadra 660AV	68040	25MHz	8Mb/68Mb	1 NuBus/PDS	Yes	N/A
Quadra 700	68040	25MHz	4Mb/64Mb	2 NuBus, 1 PDS	Yes	N/A
Quadra 900	68040	25MHz	4Mb/256Mb	5 NuBus, 1 PDS	Yes	N/A
Quadra 650	68040	33MHz	4Mb/136Mb	3 NuBus, 1 PDS	Yes	N/A
Quadra 800	68040	33MHz	8Mb/146Mb	3 NuBus, 1 PDS	Yes	N/A
Quadra 950	68040	33MHz	8Mb/256Mb	5 NuBus, 1 PDS	Yes	N/A
Quadra 840AV	68040	40MHz	8Mb/128Mb	3 NuBus	Yes	N/A
PowerMac Performas						
Performa 5200	PPC 603	75MHz	8Mb/64Mb	1 PDS	Yes	N/A
Performa 5260	PPC 603	100MHz	12Mb/64Mb	1 PDS	Yes	£1,385
Performa 6320	PPC 603	100MHz	12Mb/64Mb	1 PDS	Yes	£1,431
Performa 6200	PPC 603e	75MHz	8Mb/64Mb	1 PDS	Yes	N/A
Performa 5300	PPC 603e	100MHz	8Mb/64Mb	1 PDS	Yes	N/A
Family Mac 5400/160	PPC 603e	160MHz	16Mb/136Mb	1 PCI	Yes	£1,801
Family Mac 5400/180	PPC 603e	180MHz	16Mb/136Mb	1 PCI	Yes	£2,129
Home Office 6400/180	PPC 603e	180MHz	16Mb/136Mb	2 PCI	Yes	£1,969
Home Office 6400/200	PPC 603e	200MHz	16Mb/136Mb	2 PCI	Yes	£2,033
Creative Studio 6400/200	PPC 603e	200MHz	24Mb/136Mb	2 PCI	Yes	£2,865
Power Macintoshes						
PowerMac 6100/60	PPC 601	60MHz	8Mb/72Mb	1 NuBus/PDS	Yes	N/A
PowerMac 6100/66	PPC 601	66MHz	8Mb/72Mb	1 NuBus/PDS	Yes	N/A
PowerMac 7100/66	PPC 601	66MHz	8Mb/136Mb	3 NuBus, 1 PDS	Yes	N/A
PowerMac 7200/75	PPC 601	75MHz	16Mb/256Mb	3 PCI	Yes	N/A
PowerMac 7100/80	PPC 601	80MHz	8Mb/136Mb	3 NuBus, 1 PDS	Yes	N/A
PowerMac 8100/80	PPC 601	80MHz	8Mb/264Mb	3 NuBus, 1 PDS	Yes	N/A
PowerMac 7200/90	PPC 601	90MHz	16Mb/256Mb	3 PCI	Yes	N/A
PowerMac 7500/100	PPC 601	100MHz	16Mb/512Mb	3 PCI, 1 PD	Yes	N/A
PowerMac 8100/100	PPC 601	100MHz	8Mb/264Mb	3 NuBus, 1 PDS	Yes	N/A
PowerMac 8100/110	PPC 601	110MHz	8Mb/264Mb	3 NuBus, 1 PDS	Yes	N/A
PowerMac 4400/160	PPC 603e	160MHz	16Mb/160Mb	3 PCI	Yes	£1,108
PowerMac 8200/120	PPC 601	120MHz	16Mb/256Mb	3 PCI	Yes	£1,595
PowerMac 8500/120	PPC 604	120MHz	16Mb/512Mb	3 PCI, 1 PD	Yes	N/A
PowerMac 9500/120	PPC 604	120MHz	16Mb/768Mb	6 PCI, 1 PD	Yes	N/A



Model	Processor	Speed	RAM/Max RAM	Expansion	FPU	Price
PowerMac 9500/132	PPC 604	132MHz	16Mb/768Mb	6 PCI, 1 PD	Yes	N/A
PowerMac 7600/132	PPC 604e	132MHz	16Mb/512Mb	3 PCI	Yes	£2,149
PowerMac 8500/180	PPC 604e	180MHz	16Mb/512Mb	3 PCI	Yes	£3,016
PowerMac 9500/200	PPC 604e	200MHz	32Mb/768Mb	6 PCI	Yes	£3,536
PowerMac 9500/180 MP	4xPPC 604e	180MHz	32Mb/768Mb	6 PCI	Yes	£4,367

DayStar Mac-compatibles

Genesis MP400+	2xPPC 604e	200MHz	0Mb/1.5Gb	6 PCI	Yes	£4,994
Genesis MP600	4xPPC 604e	150MHz	0Mb/1.5Gb	6 PCI	Yes	N/A
Genesis MP720+	4xPPC 604e	180MHz	0Mb/1.5Gb	6 PCI	Yes	£8,518
Genesis MP800+	4xPPC 604e	200MHz	0Mb/1.5Gb	6 PCI	Yes	£9,986

Motorola Mac-compatibles

StarMax 3000/160	PPC 603e	160MHz	16Mb, 32Mb/160Mb	3 PCI, 5 PCI	Yes	£1,527, £1,879
StarMax 3000/200	PPC 603e	200MHz	16Mb, 32Mb/160Mb	3 PCI, 5 PCI	Yes	£1,938, £2,290
StarMax 4000/160	PPC 604e	160MHz	16Mb, 32Mb/160Mb	3 PCI, 5 PCI	Yes	£2,525, £2,995
StarMax 4000/200	PPC 604e	200MHz	16Mb, 32Mb/160Mb	3 PCI, 5 PCI	Yes	£2,349, £3,465

Power Computing Mac-compatibles

Power 100	PPC 601	100MHz	8Mb/256Mb	3 NuBus	Yes	N/A
PowerCenter 120	PPC 604	120MHz	16Mb/256Mb	3 PCI	Yes	N/A
PowerCenter 132	PPC 604	132MHz	16Mb/256Mb	3 PCI	Yes	£1,761
PowerCenter 150	PPC 604	150MHz	16Mb/256Mb	3 PCI	Yes	£1,996
PowerWave 150	PPC 604	150MHz	16Mb/512Mb	6 PCI	Yes	N/A
PowerTower 166	PPC 604	166MHz	16Mb/512Mb	3 PCI	Yes	£2,697
PowerTower 180	PPC 604	180MHz	16Mb/512Mb	3 PCI	Yes	£3,019
PowerTower 200	PPC 604	200MHz	16Mb/512Mb	3 PCI	Yes	£3,284
PowerTower Pro 180	PPC 604e	180MHz	16Mb/1Gb	6 PCI	Yes	£3,754
PowerTower Pro 200	PPC 604e	200MHz	16Mb/1Gb	6 PCI	Yes	£3,989
PowerTower Pro 225	PPC 604e	225MHz	16Mb/1Gb	6 PCI	Yes	£4,459

Umax Mac-compatibles

Apus 2000/120	PPC 603e	120MHz	16Mb/272Mb	2 PCI	Yes	£1,115
Apus 2000/166	PPC 603e	166MHz	16Mb/272Mb	2 PCI	Yes	£1,409
Apus 3000/200	PPC 603e	200MHz	16Mb/272Mb	3 PCI	Yes	£1,761
Apus 3000/240	PPC 603e	240MHz	16Mb/272Mb	3 PCI	Yes	£2,349
Pulsar 150 (was Pulsar 1500)	PPC 604	150MHz	16Mb/1Gb	6 PCI	Yes	N/A
Pulsar 166	PPC 604e	166MHz	16Mb/1Gb	6 PCI	Yes	N/A
Pulsar 200	PPC 604e	200MHz	16Mb/1Gb	6 PCI	Yes	£3,519
Pulsar 180 MP	2xPPC 604e	180MHz	16Mb/1Gb	6 PCI	Yes	£4,694

Portables

Macintosh Portable	68000	16MHz	2Mb/9Mb	Modem slot	No	N/A
PowerBook 100	68000	16MHz	4Mb/8Mb	Modem slot	No	N/A
PowerBook 140	68030	16MHz	4Mb/8Mb	Modem slot	No	N/A
PowerBook 170	68030	25MHz	4Mb/8Mb	Modem slot	Yes	N/A
PowerBook 145	68030	25MHz	4Mb/8Mb	Modem slot	No	N/A
PowerBook 145b	68030	25MHz	4Mb/8Mb	Modem slot	No	N/A
PowerBook 160	68030	25MHz	4Mb/14Mb	Modem slot	No	N/A
PowerBook 150	68030	33MHz	4Mb/40Mb	Modem slot	No	N/A
PowerBook 165c	68030	33MHz	4Mb/14Mb	Modem slot	No	N/A
PowerBook 180	68030	33MHz	4Mb/14Mb	Modem slot	Yes	N/A
PowerBook 180c	68030	33MHz	4Mb/14Mb	Modem slot	Yes	N/A
PowerBook 165	68030	33MHz	4Mb/14Mb	Modem slot	No	N/A
PowerBook 520	68LC040	25MHz	4Mb/36Mb	Modem slot	Upgrade	N/A
PowerBook 520c	68LC040	25MHz	4Mb/36Mb	Modem slot	Upgrade	N/A
PowerBook 540	68LC040	33MHz	4Mb/36Mb	Modem slot	No	N/A
PowerBook 540c	68LC040	33MHz	4Mb/36Mb	Modem slot	No	N/A
PowerBook 190	68LC040	33MHz	8Mb/40Mb	2 PC card	No	N/A
PowerBook 190cs	68LC040	33MHz	8Mb/40Mb	2 PC card	No	N/A
PowerBook 5300	PPC 603e	100MHz	8Mb/56Mb	2 PC card	Yes	N/A
PowerBook 5300c	PPC 603e	100MHz	8Mb/64Mb	2 PC card	Yes	N/A
PowerBook 5300ce	PPC 603e	100MHz	8Mb/64Mb	2 PC card	Yes	N/A
PowerBook 5300cs	PPC 603e	100MHz	8Mb/64Mb	2 PC card	Yes	£1,609
PowerBook 1400cs/117	PPC 603e	117MHz	12Mb/64Mb	2 PC card	Yes	£2,080
PowerBook 1400c/117	PPC 603e	117MHz	16Mb/64Mb	2 PC card	Yes	£3,033
PowerBook 1400c/133	PPC 603e	133MHz	16Mb/64Mb	2 PC card	Yes	£3,466

Duos

PowerBook Duo 210	68030	25MHz	4Mb/32Mb	Modem slot	With Dock	N/A
PowerBook Duo 230	68030	33MHz	4Mb/32Mb	Modem slot	With Dock	N/A
PowerBook Duo 250	68030	33MHz	4Mb/32Mb	Modem slot	With Dock	N/A
PowerBook Duo 270c	68030	33MHz	4Mb/32Mb	Modem slot	Yes	N/A
PowerBook Duo 280	68LC040	33MHz	4Mb/40Mb	Modem slot	No	N/A
PowerBook Duo 280c	68LC040	33MHz	4Mb/40Mb	Modem slot	No	N/A
PowerBook Duo 2300c	PPC 603e	100MHz	8Mb/56Mb	Modem slot	Yes	£3,310

Duo Docking Stations

PowerBook Duo MiniDock	-	-	-	None	No	N/A
PowerBook Duo Dock	-	-	-	2 NuBus	Optional	N/A
PowerBook Duo Dock II	-	-	-	2 NuBus	Yes	N/A
PowerBook Duo Dock Plus	-	-	-	2 NuBus	No	£798

PowerMac 7100

The PowerMac 7100 was launched in tandem with the 6100 in March 1994, and between them they were the vanguard of the new breed of Macintosh. The new RISC-based PowerPC chips had arrived and the trusty old Motorola 680x0 chips were dead. Well, their days were numbered, at any rate.

Based on a 66MHz 601 chip (the first-generation PowerPC chip), the 7100 is still no slouch today. It came with 8Mb of RAM, which is still enough – just – to run System 7.5, but this could be expanded up to 136Mb. The 7100 was expandable, too, with three NuBus slots and a PDS for good measure – the same expandability as the top-of-the-range first-generation PowerMac, the 8100.

By today's standards, a 7100 might be a bit slow for a professional designer or illustrator, but it's pretty usable nonetheless – and that's not at all bad for a machine that will be three years old in March.



PowerPC Performas

The first Performas with PowerPC chips have several minor variations which offer essentially the same computing power as each other, so be sure to compare prices closely. The 5200 and 6200 are the same Mac in different cases – the "5" denotes an all-in-one case, while "6" models separate the CPU and monitor. Later models like the 5260 and 6320 follow this convention but offer slightly faster processors.

Contacts

For models still officially on sale, we've listed the current estimated street prices in the UK. All prices include VAT.

Prices are changing fast at the moment, and there are plenty of bargains to be had as older models are phased out. Contact the supplier below for the range you're interested in.

This autumn has been the busiest ever for Mac releases, with more Mac-compatibles arriving almost every week. For news of the latest releases seen at Apple Expo, see this issue's News pages, starting page 16.

- **Apple Computer**
Apple: 0800 127753
- **DayStar: Computers Unlimited:**
0181 358 5857
- **Motorola**
Motorola: 01628 763200
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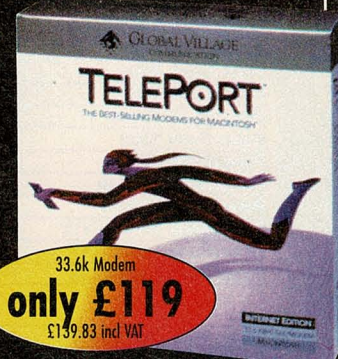
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Agfa Arcus II (1200dpi, tranny)	£ 1459

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Apple MultipleScan 1710 Trinitron	£ 649
Apple MultipleScan II 20in Trinitron	£ 1235
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View Sonic 17in	£ 449
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Apple 12/640 PS laser	£ 1049
Apple 16/600 PS laser	£ 1299
HP 8700i colour inkjet	£ 329
HP 4MV (600dpi A3 postscript)	£ 2099
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225 Mhz

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When you buy goods by mail order, there are certain basic precautions you should take to protect yourself. The vast majority of transactions can be made to go smoothly and without problems, and when problems do occur, a few simple measures can make them much easier to sort out. Many of these precautions also apply when you're buying from a shop.

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Under the Sale of Goods Act you are entitled to reject products which, broadly speaking, don't match their description, don't work as they are supposed to, or have some defect which simply means they are not of "satisfactory quality".

Where this happens, you may be tempted to wait for the supplier to put the situation right. The support staff may have promised a new part in due course, or to try to sort the situation out when their technical expert comes back from a holiday, or they may have offered some other kind of stop-gap measure while they work out what to do about your problem.

Whether or not you go along with this is up to you, but you will probably lose your right to reject the product and claim a refund under the terms of the Act. To claim a refund, you have to return your purchase within days, because if you use it to any degree you may be deemed to have "accepted" it.

In practice, it's often much quicker to get a refund on goods you buy from a retailer. Dealing with mail order companies by fax, telephone and letter can take longer and prove more unsatisfactory. The need to reject items outright is rare, but you do need to act quickly if you want to avoid getting tangled up in complications later on.

Other sensible precautions

■ If you are buying goods worth more than £100 in total, use a credit card if you can. Then, if anything goes wrong, you'll be legally entitled to claim against the credit card company as well as the seller. Otherwise, pay by cheque or postal order. Never send cash – it is impossible to trace if it gets lost, you can't stop payment and, even if you have proof of posting, it is impossible to prove how much you sent. And keep records, including the name of the person who took your order, the time and an order number. And – obviously – keep all the receipts.

■ Shop around for the best price. Always check what is included – how about packing and delivery, any necessary cables and so on? By law, an advert must state explicitly if VAT is not included in the price; if it doesn't, VAT is included. But this can be in the small print, so check carefully.

■ When you buy in person, check that everything is there and that it all works properly before you leave the shop.

Buyer's guide to best buys

Here's how to find the best Mac hardware and software buys on the market, based on MACFORMAT's authoritative, independent product tests. If you want more information on any product, ring the contact listed or refer to our original review – if you need to order an issue you missed, turn to our back issues service on page 144.

The details listed are those of the current version of each product. All prices quoted are list prices (RRPs), including VAT – check the ads in this issue for the best current deals on whatever you're interested in. Where we reviewed an earlier version of a product, this is noted in the comment line. Although we quote the ratings from our original review, the comments about each item are based both on that review and how we see the product now.

Word 6 might be as good now as when we reviewed it in MACFORMAT 20, but the competition has come on.

Note some details may have changed since we first reviewed these products – hardware in particular is updated and improved regularly. The information here has been thoroughly checked and is correct as we go to press, but prices and specifications can change at any time. We recommend you always make enquiries before you buy, to verify the product you're considering will meet your needs.

The MACFORMAT Buyer's Guide aims to provide you with a one-stop, up-to-date directory of Mac products worth buying. You can help keep it authoritative by passing on any corrections or updated details you know of. Write to us at the editorial address on page 141, or e-mail macformat@futurenet.co.uk with "Buyer's Guide" in the subject line.

Storage media



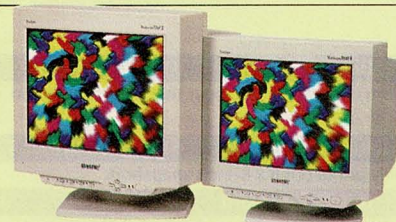
What do you do when your hard disk is full to the brim? Or when you need to transport hundreds of megabytes of data and don't have access to a fast network link? External storage devices can provide much-needed extra storage capacity, or a portable storehouse for vast quantities of data.

Name	Price	Rating	Reviewed	Contact	Telephone
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Fast and neat, but is expensive and comes with only basic software and poor documentation.					
Electronique d2 2Gb AV HD	£512	90%	MF43	Electronique d2	0171 833 0009
 Very stylish external hard disk with minimal documentation; the driver software is basic, but you still get lightning-fast performance.					
Gasteiner 1Gb HD	£293	90%	MF34	Gasteiner	0181 345 6000
 Fast, cheap and compact storage option, but with a fan that gives neighbours the impression you're testing rockets in your bedroom.					
Iomega Zip Drive	£117	81%	MF43	Iomega	0800 973194
Well-established, cheap 3.5-inch 100Mb drive that feels a bit creaky and is looking rather slow in this day and age. It might still end up replacing the floppy disk as the most ubiquitous form of storage.					
MicroNet 2.6Gb MO	£1,527	88%	MF43	MicroNet	01926 470460
Steel-cased MO drive. Speed is good but not outstanding, and we had problems mounting a 1.3Mb cart.					
MicroNet 2Gb HD	£586	82%	MF43	MicroNet	01926 470460
Dependable hard disk with excellent software and good but technical documentation. Not especially fast for the price.					
MicroNet Jaz Drive	£469	94%	MF43	MicroNet	01926 470460
 The successor to the Zip drive uses astonishing 1Gb 3.5-inch cartridges and is fast, portable and cheap. Wonderful. This is a version MicroNet has licensed from maker Iomega.					
Olympus 230Mb PowerMO	£351	91%	MF43	Mac & More	01442 878900
 Compact 3.5-inch magneto-optical drive that's neat, fast, cheap and comes with a long-term warranty and good software.					
Olympus 2600 PowerMO	£1,878	89%	MF43	Mac & More	01442 878900
Fast and fairly compact, but pretty expensive compared to its rivals. Comes with a three-year warranty.					
ONE Tech 2.6 Optical Drive	£1,268	95%	MF34	MacTriX	0181 566 8988
 Pretty fast, quiet, inexpensive and hard to fault. Oh, and the documentation is good, too. If only they could do something about the styling... We reviewed the ONE Tech 1.3Gb MO.					



Name	Price	Rating	Reviewed	Contact	Telephone
Performance Direct 2Gb	£375	92%	MF43	Performance Direct	01784 477477
 Inexpensive and functional-looking hard disk which comes with excellent driver software and performs extremely well.					
Quantum Fireball 1.2Gb HD	£269	88%	MF34	Performance Direct	01784 477477
Very quiet, very fast and a good-length SCSI cable. We reviewed the Quantum Fireball 1Gb HD.					
SyQuest EZ230	£270	94%	MF34	SyQuest	0131 339 2022
 Uses 3.5-inch 230Mb cartridges and is extremely fast. The power supply is an annoying blob that sits next to the drive and the manual is tatty. We reviewed the SyQuest EZ135.					
Xyratex 5000 2.6Gb	£1,409	90%	MF43	Performance Direct	01784 477477
 Reasonable performance and good value for money from this big slab of a drive. Good documentation and generous-length SCSI cable.					

Monitors



Not all monitors are the same. How sharp is your picture? Are the colours crisp and true to life? What resolutions are available? Is there any distortion? We've tested both 15-inch and 17-inch models from a number of manufacturers, and one thing they have in common is their weight.

Name	Price	Rating	Reviewed	Contact	Telephone
AppleVision 1710	£831	92%	MF40	Apple	0800 127753
 17-inch monitor with easy controls, overscan (no black borders) and superb picture quality – plus colour calibration software.					
Hitachi 17MVX Pro 2	£704	85%	MF40	Hitachi	0800 605 605
Good performance even at high resolutions, although setting up the screen can get fiddly and tedious.					
Hitachi 17MVX V2	£551	83%	MF44	Hitachi	0181 849 2000
Good picture quality and comprehensive controls, but disappointing documentation. Impressive for the price.					
Iiyama Pro 17-inch	£735	89%	MF40	Iiyama	01438 745482
The DiamondTron screen provides excellent quality even at the staggering maximum resolution of 1,600 x 1,200. Loses out slightly on ease of set-up.					
Mitsubishi 15HX	£376	82%	MF40	Mitsubishi	01707 276 100
Uses Mitsubishi's own DiamondTron to get close to Trinitron quality and provide an excellent display, with only a slight fall-off at the highest resolution.					
Mitsubishi 17HX	£758	83%	MF40	Mitsubishi	01707 276100
Good quality except at the highest resolution, and comes with an anti-moiré function. The manual could be more helpful.					
Samsung 15GLi	£406	81%	MF40	Samsung	0800 521 652
Good display for a unit with an FST tube, although quality suffered as usual at the highest resolution. Unusually for a 15-incher, you get a degausser.					
Samsung 17GLsi	£822	84%	MF40	Samsung	0800 521 652
A 17-inch unit with a maximum resolution of 1,280 x 1,024 and a Trinitron tube. Excellent quality at all resolutions.					
Sony 15sfil	£465	91%	MF40	Sony	0181 760 0500
 Unusually for a 15-inch monitor, the Sony provides superb picture quality at all resolutions, thanks to its Trinitron tube, great-looking design and fuss-free set-up.					
Sony 17sfil	£763	92%	MF40	Sony	0181 760 0500
 Picture quality is excellent at all resolutions, setting it up is easy and the manual is excellent – a rival to Apple's own AppleVision 1710.					
Taxan Ergo Vision 730TCO	£735	84%	MF40	Taxan	01344 484646
This 17-inch monitor offers better picture quality than its 15-inch sibling. We reviewed the Taxan Ergo Vision 730LR.					

Printers



Are you shopping for a mono printer or colour? Portable or desktop? PostScript or non-PostScript? We've reviewed dozens of printers, and here are our favourites. Don't forget to shop around for the best prices, because these change continually. For more on what to look for, see MACFORMAT 38.

Name	Price	Rating	Reviewed	Contact	Telephone
Alps MD-2010	£529	90%	MF45	Rotec Distribution	01604 402012
 Slow and clackety though it might seem, the MD-2010 produces quite superb colour and definition – but only on high-quality paper.					

Buying Advice continued

Make sure all the connectors fit and get the whole system up and running. If you've ordered by mail, check the goods carefully when they arrive. Delivery companies often demand that you sign a slip saying you've received everything "in good order and condition", but it's impractical to expect them to wait while you check. However, you can add some note like "Accepted subject to inspection of contents" when you sign for the goods. If there's anything you're not happy with, don't use the product – if you do, you could be deemed to have accepted it.

■ Whether you bought it by mail or in a shop, the law says a product must be of merchantable quality (in other words, it must work), as described, and fit for the purpose for which it was sold. The Sale of Goods Act, where these stipulations come from, has recently been revised, though, and you can expect some uncertainty in the short term about how the new rules are to be interpreted. In the meantime, the requirements above should serve as a good starting point. If your product fails to meet any of them, return it to the supplier and insist on a refund.

How to complain

If you're not happy about something, always contact the supplier first and politely explain your problem. Most companies will do their best to help, if only because they need your custom. Be patient; if there's some technical problem, it may genuinely take the dealer some time to find the solution. Most difficulties are sorted out at this stage without further fuss.

If yours isn't, put your complaint in writing, clearly stating your problem and what you'd like done. Give the firm a reasonable time to reply – say 14 days or so.

If your complaint is not resolved or you feel that the dealer is not being reasonable, you may need to take some sort of legal action to enforce your rights. This need not cost you a lot of money. Seek advice from a solicitor (ask about the free advice scheme – you may not have to pay for the initial consultation). Or contact one of the following (check your local phone directory for contact details):

■ Citizen's Advice Bureau – for general advice on your rights as a consumer, information about your options, help drafting effective letters and so on.

■ Trading Standards Office (listed under your local council) – for help when you feel that an advertisement was misleading or that a dealer is acting improperly.

■ Office of Fair Trading – for help when you believe that a dealer is not treating you fairly.

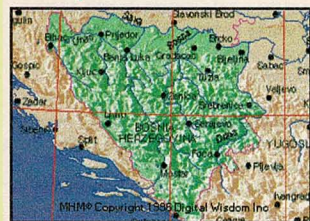
■ County Court – ask about the "small claims" procedure if you are convinced that you have explored every avenue with the dealer and are sure you want your money back.

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Product News

New maps of the world



Continents, countries and ocean floors have been reproduced by Digital Wisdom in *Mountain High Maps 2.0*, a two-CD set of bitmap and vector images.

The relief maps are like satellite images with enhanced lighting to emphasis relief. They come in a variety of resolutions and can be edited using graphics packages. Pre-made masks let you hide or show ocean floors. There are general views of the globe and numerous views of major countries and land masses.

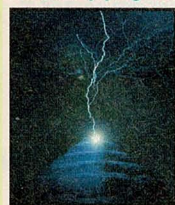
The outline maps are vector graphics built up of layers, which makes them easy to edit in either *Macromedia FreeHand* or *Adobe Illustrator*. The package also comes with animated globes for multimedia use.

Mountain High Maps sells for £449, but you can get American, European, African and Asian editions for £199 each. Or, if you're only interested in a specific country, check out the Earthshot series at £95 each.

Digital Wisdom has also announced *CoolMaps*, a 2-CD library of 500 maps and globes for only £59.95. Volume 1 contains EPS vector files with editable *Freehand* and *Illustrator* layers, while Volume 2 consists of JPEG-compressed TIFF files which weigh in at around 17Mb and are suitable for high-quality imagesetter output. The volumes retail separately at £39.95 each.

Find out more about *Mountain High Maps 2.0* and *Cool Maps* by calling Digital Wisdom on 0223 566250, or by visiting the company's Web site at <http://www.digiwis.com/>

Photoshop plug-ins



Graphics specialist Almathera has released a collection of plug-ins for Adobe *Photoshop*. Plug-ins add

special effects and features to *Photoshop*'s existing tools, and Almathera's new set - called simply *A Plug-in* - boasts some useful gadgets.

These include a "lightning" effect, which gives a convincing impression of forked lightning; a soft drop-shadow effect to give the impression of objects or text raised above the surface of the page; a shape-cutter for creating geometric shapes or cutouts on your image; a 'beveller' for creating three-dimensional effects; and more.

The price of the *A Plug-in* set will be £49.95 when it becomes available in

Name	Price	Rating	Reviewed	Contact	Telephone
Apple StyleWriter 1500	£275	90%	MF38	Apple	0800 127753
 For the price, excellent colour performance even on plain paper. Its budget background begins to show on coated and glossy papers, though.					

Apple StyleWriter 2500	£359	84%	MF38	Apple	0800 127753
A big improvement on its predecessor, the 2400, but not quite in the same league as colour rivals from HP and Epson.					
Citizen PN60	£340	82%	MF27	Citizen	01753 584111
Minute portable printer that can output in colour. The size makes the controls fiddly, though, and performance is suspect.					
Epson EPL-5500	£469	89%	MF39	Epson	01442 61144

Compact and light 600dpi PostScript printer with a useful 5Mb of RAM. Documentation is turgid, though, and you'll need to buy a lead for your Mac.

Epson EPL9000	£2,055	84%	MF29	Epson	01442 61144
A3 600dpi PostScript printer that provides good quality output from a surprisingly compact box.					

Epson Stylus Pro	£513	90%	MF38	Epson	01442 61144
 Built like a breeze block, but offers stunning smoothness and resolution, even though greens turned a bit muddy. Almost as good as a dye-sub printer.					

Fargo PrimeraPro	£1,585	84%	MF38	Bannerbridge	01268 419101
Thermal wax output is harsh and grainy, but the dye-sub output offers superb definition and colour that may prove good enough for match printing.					

FotoFUN! Printer	£493	87%	MF31	Bannerbridge	01268 419101
Affordable, good quality dye-sub colour output. Takes up little space but only prints out 6 x 4-inch snapshots.					

HP LaserJet 5MP	£1,198	95%	MF29	Hewlett Packard	0990 474747
 600dpi PostScript laser printer with excellent greyscale and resolution enhancement for remarkable output quality at the price.					

HP DeskJet 340	£235	85%	MF27	Hewlett Packard	0990 474747
Portable 300dpi inkjet with colour capability and excellent output quality. Clear leader amongst the portables at this price. We reviewed the HP DeskWriter 320.					

HP 870cxi	£494	92%	MF38	Hewlett Packard	0990 474747
 First-rate colour balance, excellent contrast and very good performance on plain paper is combined with good value. It's a winner! We reviewed the HP 850C.					

Lexmark Optra R Plus	£1,434	84%	MF29	Lexmark	01628 899 088
Magnificent 1,200dpi PostScript output from a device that could crush your desk. Expect long print times. We reviewed the Lexmark Optra R.					

NEC SuperScript 3000	£1,115	88%	MF35	NEC	0345 404020
Three different printing technologies at a bargain price, but second-division quality and long print times.					

Tektronix Phaser 140	£1,351	88%	MF38	Aztec Associates	01274 590 555
Affordable PostScript colour printer. Colour and definition nearly on a par with non-PostScript models.					

Digital input



How do you get analogue data from the real world into digital data on your Mac? Here is MACFORMAT's pick of scanners, digital cameras and related software. For more information about digital imaging, see our cover feature in MACFORMAT 41.

Name	Price	Rating	Reviewed	Contact	Telephone
Connectix QuickCam Colour	£199	85%	MF45	Connectix	0171 622 3355
As an unpretentious, low-cost and fun entry to digital still and video images on the desktop, it's difficult to fault.					
Epson GT-5000	£469	81%	MF41	Epson	01442 61144
This scanner's a little fuzzy but has reasonable colour reproduction. A little lacking in features, with poor documentation.					
Kodak DC-20	£353	91%	MF41	Kodak	0800 281487
 Offers a fairly low resolution, but is extremely easy to use, and fun, too. Comes with some basic image-editing software and other useful goodies.					

Kodak DC-50	£1,058	87%	MF41	Kodak	0800 281487
This camera's higher price pays off with crisp images and deep colours. You get a zoom lens and you fit storage cards of up to 40Mb in size.					

Linotype-Hell Saphir	£3,819	89%	MF41	Linotype-Hell	01242 285065
Superb quality scanner with excellent colours and incredible sharpness. But then you'd be entitled to expect it at the price.					
Microtek Scanmaker E3	£328	86%	MF41	CU	0181 358 5857
At 600dpi, images were a bit fuzzy and lost subtlety, but overall performance is very acceptable for a scanner of this price.					



Name	Price	Rating	Reviewed	Contact	Telephone
Umax S-12 scanner	£820	86%	MF44	IMC	01344 872 800
An impressive scanner, which does all it claims to. For the price, an excellent buy.					
Umax Vista S6E	£499	85%	MF41	IMC Distribution	01344 872 800
Very fast scanner but with a little fuzziness and difficulty with greens. Otherwise quality was good, given the price.					
Visioneer PaperPort	£293	86%	MF28	CU	0181 358 5857
Tiny A4 mono scanner that can sit between your keyboard and Macintosh – sheets are rolled in and out.					

Office



Most Macs are used at one time or another in the office or study, running worthwhile applications such as word processors, databases and spreadsheets. There are many related productivity applications, too, such as personal organisers and presentation packages. Here's our pick of the best.

Name	Price	Rating	Reviewed	Contact	Telephone
Act 2.5	£199	86%	MF36	Symantec	01734 814 230
Feature-heavy contacts manager that works well in sales offices, but lacks flexibility as a personal organiser.					
C-A-T	£222	81%	MF32	Chang Labs Europe	01285 644403
An endlessly customisable personal office organiser that can cope with correspondence, client lists and even invoicing.					
ClarisImpact 2	£152	86%	MF34	Claris	0181 756 0101
Combines spreadsheet functions with charting, outlining and DTP for the ultimate low-end business presentation suite.					
ClarisWorks 4.0	£152	92%	MF31	Claris	0181 756 0101
 The Mac's standard all-in-one office suite. Inexpensive yet very powerful in the right hands, and highly flexible, too. Get it and use it.					

Excel 5	£220	87%	MF18	Microsoft	0345 002000
The only professional spreadsheet package on the Mac boasts 3D documents, pivot tables and more power than a Saturn 5. Includes outlining, database functions and more.					
Expresso 1.0	£20	89%	MF31	Softline	0181 401 1234
Personal organiser that makes up in charm and value for what it lacks in high-powered relational data-handling.					
FileMaker Pro 3.0	£234	96%	MF37	Claris	0181 756 0101
 An excellent database that has been tweaked and tuned, and is now fully relational. Be very sure you need more power before shopping elsewhere.					

Let's KISS	£153	91%	MF41	Softline	0181 401 1234
 As a piece of software design, so far ahead of traditional spreadsheets and feeling so right that you wonder why no-one thought of it sooner.					

Organizer 1.0	£58	84%	MF31	Claris	0181 756 0101
Efficient and elegant (even slightly prim) personal organiser. Effective and affordable, though sometimes confusing.					
TypeReader Professional	£464	80%	MF44	Tekware	01384 392121
Impressively accurate and effective to use, but like any OCR software it sometimes needs rather more help than you imagine it ought to require.					
Up-to-Date & Contact 3.5	£116	89%	MF31	Now! Software	01525 237001
Dynamically-linked duo of contacts manager and diary. Occasionally a little too complex for its own good.					
Word 6.0.1	£220	92%	MF20	Microsoft	0345 002000
 The world's favourite word processor has a monumental feature list, but the bewildering array of controls, toolbars and gadgets makes it feel too heavy. We reviewed <i>Microsoft Word 6.0</i> .					

Graphics



From image manipulation to professional illustration to 3D design and raytracing, here's our pick of the top Macintosh graphics packages.

Name	Price	Rating	Reviewed	Contact	Telephone
Bryce 2	£234	93%	MF38	Principal	01706 832000
 3D landscape creation tool that's more versatile than its predecessor and can create indoor scenes, too. Easy (by the standards of 3D software) and capable of breathtaking results.					
CorelDraw 6	£465	91%	MF44	Channel MM	01703 814142
 You need a PowerMac, you need plenty of RAM, you need hundreds of megabytes of disk space – but, if you have all of these, <i>CorelDraw</i> is great.					

Product News continued



January, but if you order direct from Almathera before the end of January you'll get a £15 reduction. Find out more by calling Almathera on 0181 687 0040 or visiting <http://almathera.co.uk/>

Web authoring update



Hot on the heels of *Home Page 1.0*, Claris has announced version 2.0. Things move fast in the Internet market.

Version 1.0 made it possible to create Web pages without learning tedious HTML commands. It used a WYSIWYG display so that you could see exactly what your Web page would look like as you created it, and also took the sting out of the traditionally tricky Frames, Tables and Forms.

Version 2 builds on this by adding "site publishing". Web pages seldom exist on their own – usually you'd create several and link them together. *Home Page 2.0* consolidates all these pages, and related graphics, to make it easier to upload the finished package to your Web site.

You also get support for QuickTime and *Shockwave*, plus other popular plug-ins and, if you want to get technical, client-side image maps and "syntax colouring", not to mention numerous enhancements which make the original program even quicker and more intuitive to work with.

You can download a time-limited beta version from the Claris Web site (<http://www.claris.com>) and try it out for yourself. The price of version 2.0 in the UK hasn't been decided yet, but version 1.0 currently retails for around £89. For more information, call Claris on 0181 756 0101.

Cheaper modems

Modem maker Hayes has announced price reductions on its Accura range. Most notably, the Accura 288 Message Modem is down from around £219 to £169, a reduction of 23%.

The Accura 288 transfers data at 28.8kbps and complies with the V.34 standard. This is about the maximum speed ordinary telephone lines can cope with, and the top speed offered by most Internet service providers.

Find out more by calling Hayes on 01252 775577 or visiting its Web site at <http://www.hayes.co.uk/>

There's clip art, and there's clip art
All clip art is not the same, and you can generally assume you'll get what you

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pay for. Although you can buy cheap multi-CD clip-art packages that contain 100,000 images, too many of these images come from cobweb-infested photo library collections of yesteryear, were constructed in seconds by 11-year-olds using cheap drawing programs or are renditions of famous personalities where accuracy stops at getting the number of eyes right.

The only other option is to pay the going rate, which is what professional designers and publishers usually do. They're the people most likely to be interested in the range of themed clip art CDs from PhotoDisc. Each disc contains 100 high resolution images, and two of the latest additions to the range are *Everyday People*, containing shots of people with diverse cultures, ages and facial expressions, and *Business Today*, which contains (surprise!) a selection of corporate imagery - photographed specifically for this collection. The CDs cost £269 each or, if you use the fee-based "preferred customer" scheme, £229.

PhotoDisc has also created a series of animations for multimedia designers and Web page authors. Each CD in the Animation Series contains 120 animations, and there are eight CDs in all. If you want a sneak preview, call PhotoDisc on the number below for a free CD containing ten animations.

If you have an Internet account, take a look at the PhotoDisc site at <http://www.photodisc.com/> which enables you to select, pay for and download specific images. You can call PhotoDisc on 0181 255 2900.

Digital photography explained



Confused by digital photography? It's a fast and efficient alternative to traditional photography, but it means learning about new technology and finding out what to look for in the hardware.

Agfa has come to the rescue with a new 32-page, full-colour booklet called *A Guide to Digital Photography*. It covers the basics of photography - such as depth of field - and the technology involved in digital photography, then gives an overview of the types of digital camera currently available.

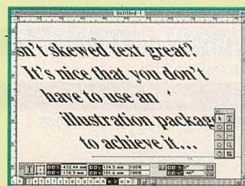
Agfa's other new booklet, *An Introduction to Digital Colour Printing*, examines emerging printing technologies and applications. You can find out what digital printing is, how it works, what advantages it offers and how it is being used.

A Guide to Digital Photography and *An Introduction to Digital Colour Printing* cost £8 each (plus postage and packing) and you can order them direct by

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Name	Price	Rating	Reviewed	Contact	Telephone
Dabbler 2 	£59	90%	MF35	CU	0181 358 5857
Natural-media painting program for those awed by multi-layered dialogues and complex options. Backed up with lots of CD-ROM resources.					
Extreme 3D 1.0	£645	86%	MF39	CU	0181 358 5857
Brilliant Bézier modelling, visible light beams and fast rendering. A steep learning curve but good documentation.					
FreeHand 5.5	£529	80%	MF33	CU	0181 358 5857
A big step forward from previous versions and still superior to arch-rival <i>Illustrator</i> . Some minor gripes remain, though.					
Illustrator 6	£376	80%	MF37	Adobe	0181 606 4000
The latest version of this vector-based professional illustration package is nearly on a par with its great rival <i>FreeHand</i> .					
Infiniti-D 3.5	£469	85%	MF42	Gomark	0171 731 7930
3D modelling, rendering and animation package that's easy to use but produces rather crude and mechanical results.					
Kai's Power Goo 	£58	90%	MF41	Principal	01706 832000
Provides many of the image manipulation tools of professional graphics applications, but is cheaper than many <i>Photoshop</i> plug-ins! Possibly the best fun you'll have with a graphics package.					
Live Picture 2.5	£934	85%	MF38	IMC	01344 871 329
A kind of super- <i>Photoshop</i> with an unusual interface but excellent compositing. Not as RAM-hungry as <i>Photoshop</i> .					
Overdrive 1.0	£176	82%	MF43	IMC	01344 871344
A novel image format is used for solid compositing features at a reasonable price. Let down slightly by the user interface.					
Painter 4 	£469	91%	MF35	CU	0181 358 5857
Blends traditional painting tools and media with mouse pointers and Bézier curves. Too arty for some, too amateur for others, but we rate it.					
PhotoDeluxe	£88	85%	MF39	Adobe	0181 606 4000
Innovative and powerful photo-manipulation package at a bargain price - if you've got the hardware needed to run it.					
Photoshop 3.0 	£738	90%	MF22	Principal	01706 832000
The market-leading professional image-manipulation program. Offers an unrivalled range of tools and plug-in effects, but needs serious amounts of RAM.					
Ray Dream Studio 4.0	£222	89%	MF39	Principal	01706 832000
Easy to use with brilliant modelling and Scene Wizards, but very slow. Clear documentation and a bargain price.					
SmartSketch 1.0	£60	89%	MF30	CGS Computerbild	0181 679 7307
Inexpensive vector or bitmap art package that provides many professional effects. A bit of a jack of all trades, though.					
StrataStudio Pro 1.75 	£1,169	92%	MF34	Principal	01706 832000
Creates complex geometries, resulting in detailed and realistic stills and animations. It's at the forefront of 3D software technology.					
xRes 2 	£645	91%	MF38	CU	0181 358 5857
Heavyweight graphics package aimed at a market beyond <i>Photoshop</i> , but using less RAM. Wonderful interface but no compositing.					

Desktop publishing



Professional print publishing is still dominated by *QuarkXPress* and *PageMaker*, but this category also includes Web page design, electronic publishing in general and various publishing utilities.

Name	Price	Rating	Reviewed	Contact	Telephone
BeyondPress 2.0	£570	85%	MF40	XChange	0171 637 2966
Easy-to-use <i>XPress</i> XTension for converting <i>XPress</i> pages into HTML. No support for font tags or frames, though.					
PageMaker 6 	£605	91%	MF32	Adobe	0181 606 4000
It can do everything that <i>QuarkXPress</i> can do at about half the price. Text-handling is a bit creaky, but layout and design is clean and simple.					
PageMill 	£88	90%	MF35	Adobe	0181 606 4000
At last you can forget about HTML codes and concentrate on designing Web pages. Some tags are missing and purists will moan about some eccentric codes, but you do get ease of use and an image editor.					
QuarkXPress 3.32	£1,169	88%	MF25	CU	0181 358 5857
The market-leading professional DTP package marches on relentlessly with its excellent text handling and XTensions. We reviewed <i>QuarkXPress</i> 3.31.					
UniQorn 1.01	£1,052	80%	MF40	Principal	01706 832000
QuickDraw GX DTP application that does things <i>XPress</i> and <i>PageMaker</i> can only dream of. Needs hardware power.					

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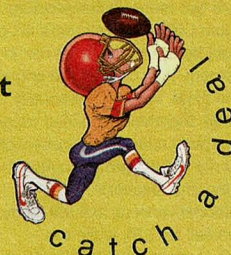


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'Steinberg's Virtual Studio Technology harnesses the incredible power of Apple's Power Macintosh computers to deliver a pro quality Multitrack Recording Studio which does not rely on any external hardware. Unfortunately for PC Owners, VST runs ONLY on Apple Power Macs - NOT 486 or Pentium'

MacMusic Package 1

PowerMac 8200/120 • X8 CD-ROM • 64Mb RAM
1.2Gb Internal Disk • 2Gb Seagate AV External Disk
* Cubase VST • MultiScan 17" Monitor • Keyboard
Mouse • Opcode Midi Interface • In/Out Audio Cables

£2,879

+VAT (£3,383)

MacMusic Package 2

PowerMac 8200/120 • 32Mb RAM
1.2Gb Disk Cubase VST • MultiScan 14" Monitor
Keyboard • Mouse • Opcode Midi Interface • In/Out Audio Cables

£1,959

+VAT (£2,302)

Other PowerMac VST Packages from £1,399 +VAT (£1,643)

All Cubase VST packages are supplied 'Set Up' and ready to use. No 'Mucking About' required. An optional tutorial video with pre-recorded demo files can be supplied.

Apple Power Macintosh Computers

PowerMac 8200/120 16/1.2G CD (x8) L2	£1299 +VAT (£1526)
PowerMac 4400/160 16/1.2G CD (x8)	£899 +VAT (£1056)
PowerMac 7600/132 16/1.2G CD (x8) L2	£1699 +VAT (£1996)
PowerMac 8500/180 16/2G CD (x8) L2	£2369 +VAT (£2784)
PowerMac 9500/200 32/2G CD (x8) L2	£2769 +VAT (£3256)
PowerMac 9500/180MP 32/2G CD (x8) L2	£3399 +VAT (£3994)

Used PowerMacs

PowerMac 6100/66 8/500 CD L2	£599 +VAT (£704)
PowerMac 7100/80 16/500 CD L2	£899 +VAT (£1056)
PowerMac 7200/90 8/500 CD	£759 +VAT (£892)
PowerMac 8100/100 16/1000 CD L2	£1099 +VAT (£1526)

Yamaha x4 CD Writer

£649 +VAT (£763)

Sony SD5000 4Gb DAT

£579 +VAT (£680)

Barracuda - 2Gb Ext. HD

£399 +VAT (£469)





Product News continued

calling 01793 707099. Or you can order from Agfa's Web site at <http://www.agfahome.com/>

Entry-level Mac pricing

The new Power Macintosh 4400/160, covered in MF45, is expected to sell in the UK for around £1,115. Based on a 160MHz 603e chip, it comes with 16Mb RAM, 8x CD-ROM drive, 1.2Gb hard drive and three PCI slots. This means it offers twice the power of Macs costing twice as much just a year ago.

Is this a Bottom I see before me?

Macbeth and a *A Midsummer Night's Dream* are two more Shakespearean plays to join CollinsEducational's list of multimedia titles. Designed for use in the classroom, they contain the entire text of the plays, both on the screen and spoken, together with video clips, interviews (with critics and actors, not the playwright), background cultural information and teachers' notes.

Educational versions include study notes and sell for £75, while the consumer versions cost £49. Find out more by calling CollinsEducational on 0181 741 7070.

The mysteries of Myst

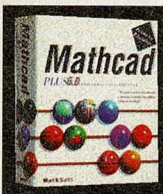


First, there was *Myst*. Then there was the screensaver, sequel, prequels...

In fact, the sequel isn't with us yet, but the prequels are. The first, *The Book of Atrus*, is now available in paperback (Transworld Publishers, £4.99), while the second, *The Book of Ti'Ana*, has just been released in hardback (Transworld Publishers, £17.99).

Apparently, if you complete *Myst 1* successfully and read the books, you'll have a better idea what *Myst 2* will be like – and it will arrive "definitely in 1997!" See page 18 for the latest news.

Serious number-crunching



Mathcad Plus 6 is the latest version of Mathsoft's powerful mathematical software. It's designed for engineers,

technical professionals, teachers and anyone whose mathematical needs go far beyond the Desktop calculator.

With powerful "visualising" tools (graphs and charts, we presume), version 6 also comes with simpler menus, improved editing and formatting and a host of other enhancements.

The price is £464, but existing *Mathcad* users can upgrade for only

➤ page 136

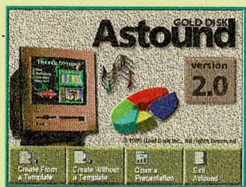
System enhancers

Whatever Apple does to the System and Finder, there will always be programmers who think they've got a better idea – either a quicker, more efficient way of doing something, or an enhancement to the Mac's interface that makes it better looking, more user friendly or simply a lot more fun.



Name	Price	Rating	Reviewed	Contact	Telephone
The Little Mac Toolkit	£35	89%	MF28	Addison Wesley	01279 623 623
A disc packed with useful (and not-so-useful) shareware and freeware combined with a very good manual.					
OneClick	\$89	91%	MF35	WestCode Software	00 1 619 487 9200
 Create floating palettes for launching applications and opening files, and set up short-cut macros for your favourite applications. Real power.					

PopupFolder 2.0	£46	87%	MF35	Softline	0181 401 1234
Hierarchical folder menus up to 16 levels deep in the Finder and in Find and Save dialogue boxes. Paradise!					
RAM Doubler 2	£71	92%	MF43	CU	0181 200 8282
 As long as you have a modern Mac, <i>RAM Doubler</i> is such an essential utility you'll wonder how you coped without it for so long.					



Multimedia authoring

As business presentation packages start to offer the features of multimedia authoring kits, and as authoring kits are used more and more by businesses looking for presentations with more polish, the boundaries are becoming blurred – hence the umbrella title "multimedia authoring" used here. This includes animation and video, too.

Name	Price	Rating	Reviewed	Contact	Telephone
After Effects 3.0	£600	83%	MF45	Adobe	0131 451 6888
Great features make <i>After Effects</i> a very cost-effective way to give your movies a professional touch.					
Amazing Animation	£58	90%	MF26	Claris	0181 756 0101
 Animation tool aimed at kids. It comes with a stock of characters to animate and the ability to add your own via scans, and children love it.					

Animation Works	£153	85%	MF26	Gold Disk	01734 814230
Aimed more at youngsters than professionals, but still needs drawing skills and an understanding of cel animation.					
Astound	£222	91%	MF36	Gold Disk	01734 814230
 A top presentation tool which makes handling quite complex actions easy. Surprisingly competent at general multimedia authoring.					

Authorware Academic	£150	95%	MF43	Prentice Hall	01442 882266
 Icon-based multimedia creation at its finest, this power-packed program is ideally suited to lecturers as well as students. Just as well, because they're the only people who can buy it.					

Digital Chisel HTML 2.1	\$159	89%	MF36	Pierian Spring	00 1 800 472 8578
Powerful entry-level educational package with a simple interface, but no built-in script language or multimedia resources. We reviewed <i>Digital Chisel 2.0</i> .					

Director 5.0	£1,174	85%	MF41	CU	0181 358 5857
A sound upgrade to the industry leader for media authoring, which irons out many shortcomings. It's easier to use, too.					
Director Academic	£46	95%	MF43	Prentice Hall	01442 882266
 De facto standard for multimedia creation in a cut-down version – for education only. Powerful and versatile but complex, especially with its Lingo scripting language.					

Elastic Reality 1.21	£293	90%	MF26	Softline	0181 401 1234
 Heavyweight morphing application that's more sophisticated than its cheaper rival <i>Morph</i> , and correspondingly harder to get into.					

Final Effects 3	£151	87%	MF45	Principal Distribution	01756 704000
The additional cost of <i>Final Effects</i> is a worthwhile investment, because this collection of plug-ins really takes <i>After Effects</i> to new heights.					
HyperStudio 3.0	£121	88%	MF36	TAG Developments	01474 357350
Practical and powerful tool aimed more at education than multimedia authors. More text styling tools are needed.					
Morph 2.5	£117	84%	MF26	Softline	0181 401 1234
Powerful and enjoyable morphing program at an affordable price. Easy to use, but lacking in professional features.					
PROMotion	£149	80%	MF26	Gomark	0171 731 7930
Animation program for serious or professional users. It requires skill and know-how, but can output to videotape.					
Scenery Animator	\$175	81%	MF26	Natural Graphics	00 1 916 624 1436
Rival landscape creator to <i>Vista Pro</i> . It is just about as powerful, but includes the ability to create animated fly-bys.					

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Product News continued

£163. Special prices are available for academic and network versions. You can call the distributor, Adept Scientific, on 01462 480055 for more information, or send your Web browser to <http://www.adeptscience.co.uk/>

And the batsman's Holding...

There's not much for a cricket fan to do in the winter except oil his willow, pick at his balls and argue about which year Abdul Qadir played at Chepstow. Until now. Because for just £29.99 (the cost of a cheese sandwich at Lords), you can buy *Cricket - A Celebration of Summer's Greatest Game*.

It's a CD-ROM compiled by Mirror Media in association with *The Independent* and NatWest, and it contains video clips, radio highlights and the NatWest Trophy Quiz (now that's a surprise). And if that's not enough ammunition for cricket bores, there are half a million words of fact, fun and commentary. Oh, and half a million statistics. Fantastic, eh? Unless you find even a one-day cricket match a tedious, incomprehensible plod.

A BIT more powerful

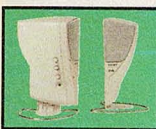
BIT (UK), distributor of high-end graphics applications, has announced the availability of *ElectricImage 3D Modeler*. It handles both solid and surface modelling and blending (softened corners, edges and intersections). It also includes a rendering package, *ElectricImage Still Camera*.

3D Modeler will sell for £934 as a standalone item, but anyone who buys the *ElectricImage Animation System* before the end of January will be able to buy *3D Modeler* for only £129.

This offer coincides with the release of version 2.7.5 of *ElectricImage Animation System* and *ElectricImage Animation Broadcast*. Features include unlimited cameras, stereoscopic rendering, 3D inverse kinematics, unlimited lights, motion path splines and "the world's fastest renderer".

ElectricImage Animation Broadcast costs £3,280, and you can find out more by calling BIT on 01420 83811.

Better sound from Sony?



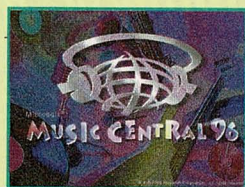
Sony has launched the SRS-PC51 speaker set (£65). Frequency response is

quoted as 80Hz to 20kHz, and power output is 2.5 watts per channel.

The SRS-51 speakers can either sit on your desktop as usual or be clamped to the side of your monitor - allegedly improving the direction of the sound. If you want more punch, you can also get the SRS-PC3DW sub-woofer for £116. This pumps out 25W of bass and is available separately if you want to upgrade later.

Find out more by calling Sony on 0181 760 0500 or taking a look at Sony's Web site at <http://www.sony-cp.com/>

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Multimedia CD-ROMs

The invention of the CD-ROM has created a whole multimedia publishing industry turning out educational, reference and leisure titles by the score. Here's our list of CD-ROMs that every home should have on its bookshelf. Possibly.

Name	Price	Rating	Reviewed	Contact	Telephone
Cinemanania 96	£30	89%	MF36	Microsoft	0345 002000
Typically thorough and well-designed Microsoft encyclopaedia - but would you want to buy the new version every year?					
Encarta 96	£50	83%	MF42	Microsoft	01345 002000
Microsoft's definitive multimedia encyclopedia is bang up to date, but the Mac implementation is flawed.					
Encyclopedia of Nature	£40	85%	MF36	Dorling Kindersley	0171 753 3488
Excellent enhancement of the paper-based encyclopaedia, but not enough interactive multimedia technology.					
Encyclopedia of Science	£40	89%	MF32	Dorling Kindersley	0171 753 3488
Misses out on cutting-edge whizz-bang multimedia, but provides an absorbing background to science in general.					
History of the World	£40	89%	MF38	Dorling Kindersley	0171 753 3488
More flashy and inspirational than in-depth and authoritative. Oozes quality, but built for browsing rather than research.					
Makers of the 20th Century	£45	89%	MF41	News Multimedia	01525 852 813
200 personalities of the 20th Century are examined and explained in a well-presented and often intriguing CD.					
MTV Unplugged	£25	88%	MF40	CIC	0181 846 9433
Multimedia database of <i>Unplugged</i> performances going back seven years and including interviews, video and set listings.					
Music Central 96	£40	95%	MF40	Microsoft	0345 002000
 <i>Music Central</i> is to music what <i>Encarta</i> is to the world at large. Typically for Microsoft, very good indeed, with a subscription deal for regular Web updates.					

Quest for Fame	£50	85%	MF40	IBM	01329 242728
Cross between a game and a multimedia celebration of the pop industry. Embark on your own quest for fame.					
RedShift 2	£50	92%	MF32	Maris Multimedia	0171 488 1566
 Restrained but magnificent exploration of the universe using sound astronomic principles, hailing originally from Russia rather than the gung-ho States. Utterly definitive.					
Wings: Midway to Hiroshima	£40	86%	MF33	BMG	0171 384 7800
A database of 636 aircraft from World War II, together with 15 virtual planes and five virtual airbases to explore.					
World Reference Atlas	£50	90%	MF37	Dorling Kindersley	0171 753 3488
 Bestrides the Earth like a colossus, giving you the information you need, when you need it. The maps and graphics are mouth-watering.					



Multimedia for Kids

How do you keep the kids entertained on a wet Sunday afternoon in November? How do you justify the purchase of a new PowerMac to your spouse/bank manager/conscience? Multimedia CD-ROMs for kids can entertain, occupy and educate all at the same time. Here are the best we've seen.

Name	Price	Rating	Reviewed	Contact	Telephone
Adventures of Peter Rabbit	£30	88%	MF43	Mindscape	01444 246333
Seven-year-olds might find this a tad naïve, but the charming atmosphere and beautiful illustrations make it a real winner.					
Counterfeit Collaborator	£28	90%	MF35	Sierra	01734 303322
 A genuinely intriguing mystery forms the heart of this Playtoon CD. French imagination and illustration translated into English makes a beguiling combination.					
Darby the Dragon	£20	89%	MF44	Broderbund	01429 273029
A rare and challenging adventure game which will educate and captivate your kids.					
Digby's Adventures	£20	87%	MF35	Eidos Interactive	0121 606 1800
A lovable Yorkshire terrier gets into all sorts of scrapes in this entertaining shaggy dog's tale.					
Fun School Young Scientist	£26	85%	MF42	Europress	01625 859 444
Fun educational package for five-to-nine-year-olds, with lots of suggestions for out-of-school activities.					
Gregory and the Hot Air Balloon	£20	85%	MF44	Broderbund	01429 273029
Aimed at the younger adventurer, this is a well designed interactive story, if perhaps a bit too "cute" for older kids.					
Greatest Toyshop on Earth	£30	88%	MF32	Omnimedia	0181 974 6766
A brilliantly entertaining set of kids' toys in a comfortably British environment. Something to keep coming back to.					
It's a Bird's Life	£20	87%	MF35	Eidos Interactive	0121 606 1800
With 60 pages of story, <i>It's a Bird's Life</i> entertains your kids and teaches them something at the same time.					
KidWorks Deluxe	£35	88%	MF43	ABLAC	01626 332233
An excellent package which encourages children to get involved in all aspects of story making.					

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Product News continued

Faster graphics



Graphics-card specialist Radius has launched its new Thunder 3D PCI graphics card, aimed at professional 3D designers. The Thunder 3D has QuickDraw and QuickDraw 3D acceleration, to boost the Mac's standard graphics-handling system, plus texture-mapping capabilities, 30-bit colour for super-realistic images and Super Resolution, providing displays of both 1,600 x 1,200 pixels and a 1,920 x 1,080 pixels (widescreen).

The Thunder 3D is expected to sell for £4,100 or less. To find out more, contact the UK distributor, Computers Unlimited, on 0181 200 8282 or try the company's Web site at <http://www.unlimited.com/>

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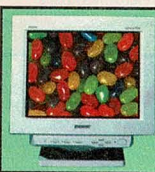
The price is £464 and you can find out more from MC Research on 01277 632887. You can also download a free demo version from the Web site at <http://www.mcresearch.co.uk/>

Music for all

Rhapsody is a music-creation program for musicians, arrangers, students, teachers, hobbyists and performers. It comes with composition, transcription and editing tools, and you can finish the job by printing sheet music.

You get up to 32 staves of music, simultaneous recording of multiple voices, variable zoom in and out, transcription of MIDI files and more. The price is £250 and you can find out more from the distributor, Arbiter, on 0181 202 1199.

15-inch... or less



Sony has replaced its entry-level 15-inch multiscan monitor (the Multiscan 15sx) with a new model - the Multiscan 100sx. The new model uses Sony's renowned Trinitron technology, which produces sharp pictures and vibrant colours. It can display at a resolution of 1,024 x 768 pixels at a

▶ page 140

Name	Price	Rating	Reviewed	Contact	Telephone
Logical Journey of the Zoombinis	£30	96%	MF41	Broderbund	01429 273029
 A well-designed course in mathematical logic for kids that's almost completely disguised as a superb-looking and fun-to-play game.					
The Lost Mind of Dr Brain	£28	92%	MF43	Sierra	01734 303322
 Challenging, lots of fun and well suited to the intended age group (12 plus), <i>Dr Brain</i> is addictive and has longevity. A great buy.					
The Mandarin Prince	£28	88%	MF37	Sierra	01734 303322
A firm favourite in his native France, cub reporter Spirou solves another mystery in this fine title.					
Marty & The Trouble with Cheese	£25	81%	MF37	Maxis	0171 505 1500
Not the best story in the world, but cute characters and microphone (rather than keyboard) input make this storybook fun.					
Maths Workshop	£30	90%	MF41	Broderbund	01429 273029
 Teaches maths in the broadest possible sense, with wonderful-looking activities and a good manual. Needs adult assistance, though.					
My First Amazing World Explorer	£30	89%	MF41	Dorling Kindersley	0171 753 3488
Interactive atlas that's pitched at just the right level for younger children, showing the world as a diverse and living thing.					
PB Bear's Birthday Party	£30	92%	MF35	Dorling Kindersley	0171 753 3488
 Interactive storybook entertainment for three-year-olds which combines fun, learning and real photography in a quality package.					
Peter Rabbit's Numbers	£30	82%	MF41	Mindscape	01444 246333
Not that much to do and a bit repetitive, but a good learning tool nonetheless, and quite rewarding for children.					
The Secret of the Castle	£28	90%	MF35	Sierra	01734 303322
 This Playtoon disc is produced to the same high standards as its sister titles, but in this case its value is more entertaining than educational.					
Sitting on the Farm	£20	87%	MF35	Eidos Interactive	0121 606 1800
Make up your own stories and songs with this farmyard-based disc.					
The Stone of Wakan	£28	88%	MF37	Sierra	01734 303322
This Playtoon animated storybook offers one of the most sophisticated tales in the range.					
Uncle Archibald	£28	90%	MF35	Sierra	01734 303322
 Another excellent Playtoon about imaginary monsters that come to life, resulting in slapstick chaos. You can also use it to learn French.					
The Way Things Work 2.0	£40	88%	MF45	Dorling Kindersley	0171 753 3488
Full of clear explanations and plenty of fun. Kids will find this easy to use, and can learn at their own pace.					
Word Stuff	£20	85%	MF39	Centregold	0121 606 1800
Teaches English and explains various everyday situations. An excellent blend of entertainment and real educational value.					

Games



As a games machine, the Macintosh now rivals both the PC and the plethora of whizz-bang plastic games consoles flooding the teen market. The best games tend to be those that involve brains as well as reflexes, and those which absorb you thoroughly into their game world. Here's our choice of the best recent titles.

Name	Price	Rating	Reviewed	Contact	Telephone
Allied General	£45	85%	MF37	Mindscape	01444 246333
Standard but utterly absorbing hex-based wargame spiced with black-and-white newsreel footage.					
Angel Devoid	£40	84%	MF37	Mindscape	01444 246333
Compelling and violent game that's also an interactive movie. Traditional adventure format with an unsettling atmosphere.					
Apache Longbow	£45	92%	MF41	Digital Integration	01276 684959
 3D Gouraud-shaded flight sim with real class and some fairly hefty hardware requirements. Once you've mastered the controls, the missions are a joy.					
Asterix: Caesar's Challenge	£40	92%	MF36	Infogrames	0171 738 8199
 Great family fun with superb animations and humour, and oozing with novelty. Just don't ask awkward questions about long-term appeal.					
Colonization	£45	93%	MF32	MicroProse	01454 893900
 The follow-up to <i>Civilization</i> is hardly an orgy of state-of-the art sound and graphics, but it is an utterly absorbing simulator with long-term appeal.					

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Product News continued

refresh rate of 80Hz, which means high resolution without flicker.

The monitor name change has apparently come about because of a ruling in the USA stating that the old system of describing CRT tubes by their physical size rather than the size of their image was misleading. A 15-inch tube typically produces an image measuring about 13.9 inches from corner to corner – the rest is hidden by the monitor casing.

The new 100sx will cost around £380, or less if you shop around. Find out more by calling Sony on 0181 760 0500 or by taking a trip to the Sony Web site at <http://www.sony-cp.com/>

Mac Diary

ArtiMEDIA

Where: Batley, West Yorkshire

When: January to March

What: Short courses, seminars, introductions and meetings for multimedia designers, writers, Internet professionals and Internet beginners

Price: From nothing to £60, with reductions for ArtiMEDIA members and other concessions

Contact: 01924 442598

UK Internet Show

Where: Olympia, London

When: Wednesday 15 January to Friday 17 January

What: Business-orientated exhibition and conference about the commercial possibilities of the Internet and intranets

Contact: Sally Buller on 0171 208 4162

Price: £10 at the door, but it's free if you pre-register

User Groups

User groups are more or less informal clubs of people with a common interest – in this case, the Mac. If you don't have any Mac-owning friends, they are a great source of information, advice and help. Some groups simply meet every now and again; others are more structured and may even publish regular newsletters.

UK User Group Council list

The UK User Group Council maintains a list of the Mac user groups which have registered with it. If you wish to contact the council, call John McKnight on 0181 314 5555.

Local groups

■ **Aston University Mac UG:** Birmingham area. Contact Ray Tier on 0121 359 3611

■ **Berkshire Mac UG:** contact Ian Burn on 01734 813

■ **Blackburn Mac UG:** contact Roger Moreton on 01254 670043

■ **Bristol (BAUD):** contact Malcolm Ingsley on 01454 616846

Name	Price	Rating	Reviewed	Contact	Telephone
The Dame was Loaded	£40	81%	MF40	Philips Media	0171 911 3081

A 1940s America detective game that's actually a lot better than the dismal promotional material would have you believe.

Day of the Tentacle	£40	94%	MF33	Virgin Int. Ent.	0171 368 2266
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A game it's impossible to fault. You'll love it. You'll hate it. You'll want to wring its neck. It's funny, it's involving and the cartoons are quite superb.

Descent	£40	87%	MF34	Interplay	01628 423666
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Technically superb, ground-breaking game that's thrilling to play. If only it had a bit more gameplay and variety.

The Dig	£45	83%	MF38	Virgin Int. Ent.	0171 368 2266
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Wonderful production and mind-bending puzzles wrapped up in a glitzy package that doesn't quite bowl you over.

Doom 2: Hell on Earth	£45	90%	MF31	Virgin Int. Ent.	0171 368 2266
-----------------------	-----	-----	------	------------------	---------------



The blood-spattered violence *Doom* is famous for hides some quite involving puzzle-solving. One of the best 3D arcade games around.

The Elk Moon Murder	£35	74%	MF44	Activision	0181 742 9400
---------------------	-----	-----	------	------------	---------------

Another high-quality adventure game for the Mac. Maybe a little too easy for some and just more of the same for others.

F/A-18 Hornet 2	£69	93%	MF36	Softline	0181 401 1234
-----------------	-----	-----	------	----------	---------------



Realistic, absorbing and fun – an instant classic. Imaginative and interesting missions that progress into desperate adrenaline-laced strikes.

Full Throttle	£45	85%	MF37	Virgin Int. Ent.	0171 368 2255
---------------	-----	-----	------	------------------	---------------

Wonderful to look at and enjoy, but ultimately a portfolio of entertaining cut scenes punctuated by mainly shallow puzzles.

Gabriel Knight: The Beast Within	£45	84%	MF42	Sierra	01734 303322
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Interactive movie/adventure game that for once successfully blends video footage with excellent gameplay.

IndyCar Racing II	£17	94%	MF42	Sierra	01734 303322
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Spectacular simulation at its finest, and at a real bargain price. Stunning graphics and attention to detail, combined with responsive cars and ruthless opponents.

Marathon 2	£65	95%	MF35	Softline	0181 401 1234
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A huge game task, addictive gameplay and excellent graphics and sound. What more could you ask for? Well... maybe a lower price.

MechWarrior 2	£50	89%	MF43	Activision	0181 742 9400
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Its complexity is initially confusing and the controls can take some getting used to, but *MechWarrior 2* is too addictive to let that worry you for long.

Muppet Treasure Island	£35	80%	MF44	Activision	0181 742 9400
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Incredible animation, great control system, engaging sub-games and puzzles, but it doesn't offer enough longevity even for younger players.

Panzer General	£45	80%	MF42	Mindscape	01444 246333
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Complex and absorbing hex-based wargame with five major campaigns and refreshingly mild hardware demands.

Pro Pinball: The Web	£35	90%	MF44	Empire	0181 343 7337
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The finest pinball simulator ever (full stop).

Safecracker	£40	82%	MF44	Warner Interactive	0171 391 4300
-------------	-----	-----	------	--------------------	---------------

A gentle game with a well judged difficulty curve. What it might lack in raw excitement it amply makes up for with its excellent graphics and clever, testing puzzles.

SimIsle	£35	83%	MF43	Maxis	0171 505 1500
---------	-----	-----	------	-------	---------------

A good idea with clean and pretty graphics, but having to work through agents all the time can be frustrating.

Spycraft	£50	84%	MF39	Activision	0181 742 9400
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An involving spy simulator that needs time and hardware. Superb blend of video, arcade sequences and puzzles.

Ultimate Doom	£30	85%	MF34	GT Interactive	0171 258 3791
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This full version of *Doom 1* is shaded little by the release of *Doom 2* and is a good buy for budget-conscious blood fans.

WarCraft II	£45	93%	MF45	Zabrac Entertainment	01626 332233
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A delight to look at, with excellent effects. In multiplayer mode, this top-down 2D wargame is as near to perfection as a game of this type has come.

Worms	£30	89%	MF45	Team 17	01924 271637
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Simple concept with almost endless tactical possibilities. Great multiplayer game but let down by a clumsy interface. Almost a classic.

X-Wing	£45	90%	MF36	Virgin Int. Ent.	0171 368 2255
--------	-----	-----	------	------------------	---------------



The classic *Star Wars* flight sim finally makes it onto the Mac, together with a facelift and 102 missions. It's good, but needs serious hardware.



How to contact MACFORMAT

Editorial enquiries

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next year... if it's good enough. And don't even think of asking for it back afterwards.

Problems or questions?

■ Sorry, but we cannot give personal help with technical problems or buying advice, whether by phone, fax or e-mail. If you have an urgent problem with a new Mac, try the Apple Assistance Centre on 01753 615999.

■ We try to make ourselves available to answer Cover Disc related and general reader calls on Wednesday afternoons from 2pm to 6pm, so please ring then if you have to. We cannot answer technical queries over the phone - sorry! We hope you'll understand that because we receive so much correspondence we can't promise to reply to faxes, e-mail or mail personally, even if you include an SAE. However, rest assured that we do read all correspondence we receive.

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Winners

Announcing the lucky winners of recent competitions...

Back in MACFORMAT 37, we gave you to chance to air your views in our Readers Survey - and in doing so, the opportunity to win a Macintosh Performa 5300, a fully-featured multimedia computer worth £2,375.

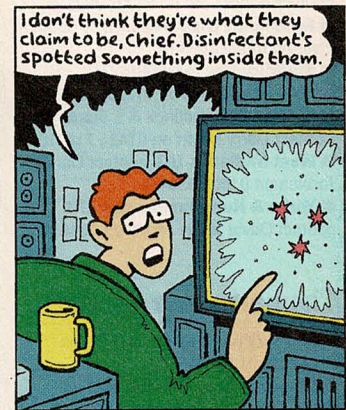
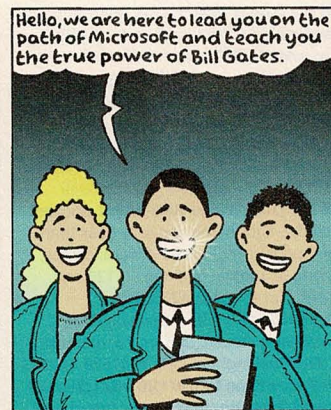
The Performa 5300 comes with a whole bundle of software, and the lucky winner is David O'Brien of Perth, Scotland. Well done to you!

In MACFORMAT 44, we asked for your views in the 1996 MACFORMAT Reader Awards. In replying, you also had the chance of winning a MACcelerate 180-MHz upgrade card worth £586, courtesy of Gordon Harwood Computers. The lucky winner is Cherry Klein of London. The 10 runners-up who win a 12-month subscription to MACFORMAT are: Warren Whyte, London; Gordon Low, Angus; Robert Blatchford, York; David Simons, Derby; A U Westerhout, Holland; John Noble, Maidstone; Ian Wilks, Huddersfield; John Stone, Bristol; Steven Smith, Bristol; Octavio Dos Santos Neto, London. Congratulations to all!

MF

The Classic System Crew

by Bob Lynch





User Groups continued

- **Cambridge Apple UG:** contact Ian Archibald on 01223 311157
- **Cancer Research/RMH UG:** contact Raymond Henry on 0181 643 8901
- **Cumbria Mac user group:** Monthly meetings, newsletter, training (reasonable rates). Call Linda Linsell, 01229 828422 or send SAE c/o 10 Athol Street, Barrow-in-Furness, Cumbria LA14 2QT.
- **Gateway UG:** Norfolk area. Contact Verne Anderson on 01638 513000
- **Glasgow Mac UG:** contact Stephen Broadfoot on 0141 339 6646
- **Herts/Beds Apple UG:** contact Norah Arnold on 01582 573918
- **Liverpool Apple UG:** contact Irene Flaxman on 0151 928 4142 or 0151 949 0307
- **London Mac UG:** contact John McKnight on 0181 314 5555
- **Mac Assist:** Cardiff and district. Contact Nigel Arrighi on 01222 224682
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- **Midland Mac UG:** Worcestershire. Contact Ivan Knezovich on 01299 402631
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- **Motorola data/fax 3400 Pro** modem, 28.8bps, external, desktop, still boxed and under guarantee, can be seen - £120 ono. Exeter ☎ 01752 257702
- **PowerMac 7500/16/100,** 4x CD-ROM, colour monitor, HP DeskWriter printer (b/w), keyboard, MacDraw Pro software, still boxed, unregistered - £1,600 ono. Albert ☎ 0118 945 5295 or 0118 942 0311
- **Teleport Gold II modem,** 14.4bps; fax and OCR software plus manuals - £45. John ☎ 0181 7615019
- **Performa 400 4/40,** colour monitor, keyboard, mouse, ClarisWorks, BrushStrokes and more, external CD-ROM drive, good condition - £350. ☎ 01299

- 270076 (after 6pm)
- **VRAM 512K** - £6; Quantum 40Mb internal hard drive, fully working, including System 7.1 - £20 ono; ThunderCache 32MHz with FPU, accelerates LC, LCII or Color Classic by 220% - £130. Bristol, Tony ☎ 0117 907 9362 (after 6.30pm)
- **Performa 400 8/80,** 13-inch monitor, keyboard, mouse, software, StyleWriter II, light home use - £450. ☎ 01244 660214
- **PowerMac 7200/90 48/500,** 15-inch monitor, keyboard, Hyperspeed accelerator card, Platinum modem and DeskWriter 520, software and books including MS Office - £2,350 ono. Graham ☎ 01628 487936
- **Keyboard,** mouse, leads and 13-inch b/w monitor, good condition. - offers. Jan ☎ 01865 275693
- **Original Newton MessagePad,** 1Mb storage card, fax/modem, all manuals, protective case - £175; Lego Dacta set as used at LegoLand, all sensors etc - £175; Both for £320. Paul ☎ 01332 862371
- **Performa 450 8/120,** monitor, keyboard, mouse, Apple 2x CD-ROM, System 7.5.3, Claris 3, UnderWare, Expresso, lots more, vgc - £675, can deliver. Gordon ☎ 01304 812184
- **StyleWriter II,** vgc with leads and software, but no manual - £80. ☎ 01760 755402
- **Centris 660AV 12/230/CD,** home use only, excellent condition, boxed with manuals, keyboard, mouse (working demo) - £650 ono. James ☎ 0114 255 1983 (after 6pm)
- **Mac LC 6/40 CPU,** keyboard, mouse, System 7, manuals, vgc - £300; Apple 12-inch RGB colour monitor, excellent condition - £100. John ☎ 01793 783555
- **Two 4Mb 72 pin SIMMS** - £15 each; four 256k 30 pin SIMMS - £5 each; Apple CD300i internal 2x speed drive - £45. Mark ☎ 01225 767941 (eves)
- **Mac IICx 8/160,** mouse, keyboard, cables, Sony 20-inch monitor, Radius card, Ethernet card - £750. Elaine ☎ 0121 426 3210 (eves)
- **LCII 8/40,** 12-inch monitor, StyleWriter II - £400 plus free CD-ROM drive. New Malden ☎ 0181 942 2443
- **Performa 475 4/160** monitor, keyboard, mouse, including ClarisWorks v2.0 - £400 ono. ☎ 01454250376

Software

- **Aldus PageMaker 4** - £125; IDD MacDraft CAD programme - £25. John ☎ 01793 783555
- **Prince of Persia 2, Monkey Island 2, Just Grandma & Me** - £10 each; RAM Doubler - £25; Grolier Encyclopedia, Animals of Sandiego Zoo - £15 each or swap other CDs etc. Mark ☎ 01225 767941
- **Virtual Tarot, Xplora-1, Freedom of the Press Lite, MACFORMAT** CDs (complete) - offers or swaps. ☎ 01458 833864 (early mornings)
- **MicroSoft Office v4.2.1,** complete as new - £60, Aldus Persuasion v3.0 - £20



ono; *Sim City* CD-ROM - £15; *Matlab v4* - £20; first 41 issues *MACFORMAT* (except 38) with Cover Disks and CD-ROMs - offers; large selection of Mac books and books on C and C++ ☎ 01760 755402

■ **Photoshop 3.0** CD deluxe English version, un-boxed, hence - £100. ☎ 01736 755303

■ **AI Unser Jr Arcade Racing, Out Of The Sun, Indiana Jones and the Fate, Now Utilities 5.0** - the lot for £50, can split. Stuart ☎ 01784 457507

■ **UniQorn 1.01**, highly rated, Quick-Draw GX DTP package, unwanted Apple Expo prize, complete, boxed, un-registered - £220 ono. St Neots ☎ 01480 477244

■ **Microsoft Office 4.2.1** for Mac and PC, complete - £50 on disc. ☎ 0181 761 5019

■ **Video Director v2.0**, Edit Control for Mac, Lanc Source Deck, Infrared recorder, unwanted gift, still boxed - £60. ☎ 01823 421619

■ **MacPlay Star Trek 25th Anniversary** CD, boxed - £10; *Peter's Magic Adventure and Numbers Adventure* - £10 for set. ☎ 01642 652984

■ **Marathon** - £20, *Flying Nightmares* - £20, *MicroSoft Flight Simulator* - £15, *PGA Tour Golf II* - £20, *Links Pro* - £20 *Sim Ant* - £15. All 3.5-inch disc. ☎ 01962 853525

■ **Microsoft Office 4.2.1** for Mac, brand new, never downloaded, user registration forms, on CD-ROM, boxed, genuine sale - £120. Linda ☎ 01229 828422

■ **Office 4.2.1 CD-ROM**, latest versions of *Word*, *Excel*, *PowerPoint* and *Mail*, mint condition and un-registered - £175. Sheffield, Chris ☎ 0114 264 6535 (after 9pm)

■ **ClarisWorks 4.0**, boxed - £40 ono, System 7.5, CD-ROM including manual - £30 ono. ☎ 01704 563353

■ **The Dig** - £20; *Myst* - £10; *Lucas Arts Archives Vol. 1* - £25; *Bad Day On The Midway* - £10; *Ghosts* - £10, all in good condition. ☎ 01522 595152

■ **Director 4** (includes *MacroModel*, *SoundEdit16*, *Painter*) plus tutorial CD, manuals etc, boxed, un-used, unregistered - £250 ono. ☎ 01392 435150

■ **Adobe Type Manager 3.9**, including 30 typefaces, un-used, not needed, half price, a real bargain - £19. ☎ 01527 576858

■ **Rednex** - £10; *Peanuts* (Snoopy) - £10; *Asterix* - £15; *Making Music* - £15; *Rock Rap 'n' Roll* - £10. ☎ 0191 234 4410

■ **ClarisWorks** - £65; *X-Res* - £300; *Live Picture* - £400; *Painter* - £200; *Black Box* - £45; *KPT* - £75; *Norton Utilities* - £55, all latest versions, offers considered. ☎ 01992 501499

■ **Marathon CD** - £20; *WarCraft* CD - £15 (unboxed); *Lucas Arts Archives* (*Day of the Tentacle*, *Sam & Max*, *Indy FOA*, *Rebel Assault*, *Dark Forces*) - £25-30 or everything for £45, big bargains!! Lawrie ☎ 01273 503330

■ **DiscWorld**, *Full Throttle*, *Star Trek TNG: Final Unity*, *The Dig*, *Comanche*, *Myst*, *Zork*, *Daedalus* - £15 each; *A-10 Attack!*, *Marathon* - £20 each; *Lucas Archive 1* - £25. Mark ☎ 01279 501676

■ **SoftWindows 2.0** - £75; *AfterDark v2* - £5; *RAMDoublor v1.6* - £18; *Quick-Figure Pro v2.1*, fast Newton spreadsheet - £20 ono. Bristol, Tony ☎ 0117 907 9362 (after 6.30pm)

■ **DiscWorld Mac CD-ROM**, un-opened - £20 ono. ☎ 0181 842 4604 (after 6pm)

Wanted

■ **PowerPrint**, drivers and cable for non-Apple printers. Roger ☎ 01702 467881

■ **As soon as possible**, Apple portable "Power CD" -ROM player and sheet-feeder for portable *StyleWriter* - good price paid for as new condition. Charles ☎ 0181 758 0851

■ **Callifonts software** for calligraphy and ancient languages. Brian ☎ 01943 461211

■ **A map making program** for use with

Illi or a road route maker program for Army Cadet Force Detachment. Stafford ☎ 01785 226471

■ **Design student** seeks 2nd hand copies of *QuarkXPress/PageMaker*, *Free-Hand/Illustrator* and *Photoshop* to aid studies. Roland ☎ 01823 274357 (eves)

■ **SoftPC**, non-power Mac version (LCII compatible). Anna ☎ 0191 284 5456 (eves) or e-mail n3387915@ncl.ac.uk

■ **True Basic** instruction book. Chris ☎ 01344 485568

■ **Extended Apple keyboard** and mouse. Maxine ☎ 01222 491807

■ **PowerBook**, sensible price, good condition. ☎ 01420 477502 or e-mail artglass@zoo.co.uk

■ **Manuals for PowerMac 1600/AV** needed quick, photocopies considered. ☎ 01253 352848

Swap shop

■ **Desperately wanted** - *Rebel Assault 1* or 2 (or Syndicate). Will swap Sega or Macintosh games or pay money. Cork, Ireland, Alanna ☎ 00 353 21 545139 (after 4.30pm)

■ **Swap Mac IIvx**, 8Mb RAM, 260Mb hard disk for *Apple Media Tool* or swap *Director v4.04* for *Apple Media Tool*. ☎ 0171 787 6505

■ **Alone In The Dark 2**, *Evocation 2*, *The Dream Flight Simulator* (floppy) - to barter against *Actua Soccer* for Power PC. Italy ☎ 00 39 39 669174

Books/magazines

■ **Every MACFORMAT** from issue one, including all floppies and CDs and promotional pre-issue copy - offers. Nick ☎ 01454 618653

Help wanted

■ Address of firms which supply programs suitable for **genealogy and family tree study** or suitable shareware products. ☎ 01861 522445.

Thematic Groups continued

McFarlane-Watt on 01865 784777

■ **Medical UG**: contact Keith Davey on 01836 348284

■ **Microsoft UG**: contact 'Enquiries' on 01252 834995

■ **Multimedia UG**: contact Richard Hurley on 01273 834588

■ **Newton MessagePad West Yorks User Group**: contact David on 0113 278 0691

■ **PageMaker UG**: contact David Foster on 01509 415101

■ **QUAD Club (QuarkXPress)**: contact Philip Caplan on 0181 523 4233

■ **School Mac**: Gloucestershire. Contact Bill Henley on 01453 825422

■ **School Mac UG**: Cambridge.

Contact Derek Smith on 01945 584146

■ **Special Needs UG (SNUG)**: contact Geoff Hughes on 01744 24608

■ **The British IIGS UG**: contact Peter Stark on 01223 838231

■ **Young Mac**: call 01795 535472

Others

Advertise your user group here. It need not be registered, but must be a non-commercial user group - just send us your full details and we'll do the rest.

■ **Artists archive and news service**: contact The Research Station on 0181 778 6547 (24 hours) 38.4bps plus Web site at <http://www.metamute.co.uk/>

■ **MacLin, E-lans MUG**: meetings every other Tuesday, bimonthly newspaper, for info call +46 (0) 141 220330 or e-mail omar@motala.mail.telia.com

■ **MacHelp**: non-profit helpbank for all Mac problems. Write to: MacHelp - Hermelyster 10, B2610, Wilryk, Belgium.

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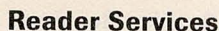
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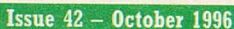
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ABC

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Doing a number: The Tiny Zone!

Hello and welcome again to Tiny Zone, the section of MACFORMAT that's still at version 1 point nothing. This may be opening a huge can of worms, but have you noticed how version numbers are getting just a bit silly? Time was, you went from v1 to v2 and so on, with maybe a point-something in between for very minor upgrades. But now CorelDraw arrives 'straight in at number 6', as they say on the chart shows, because the PC version is up to 6. There will be a v7 on the PC only; the next Mac version will be v8. Likewise, you've got FreeHand jumping straight from v5.5 to v7, 'because it's such a major upgrade' (nothing to do with its major competitor being at v7 already, oh no). Then there's the amazing arithmetic by which Word 6 + Excel 5 = a few other bits = Office 4.2. But the prize must go to Marathon, upgraded from 1 to 2 and then straight on to Infinity. Nobody gets the drop on Bungie!

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- FreeHand 7.0, two Agfa scanners, new Macs from Apple and Umax, plus Apple's latest LaserWriter
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Technology winner of the BT/Sunday Times 1996 Super-highway Award, the JFAX Personal Telecom service forwards your fax and voice messages to your e-mail box, so you can pick them up whenever and wherever you want, at home or overseas. You don't even have to have your computer switched on – JFAX will store your messages until you are ready to access them. Subscribers get their

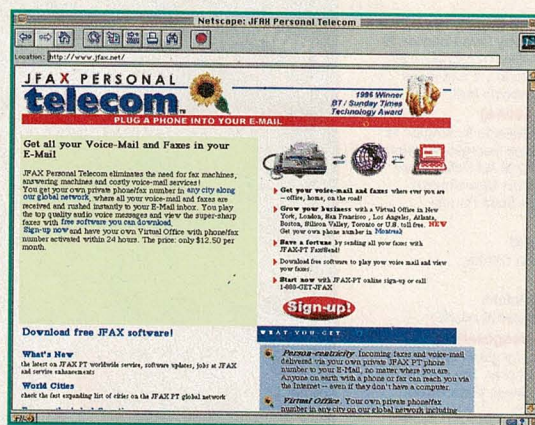
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box for details. The closing date for entries is Friday 31 January 1997.

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1. You can create a virtual office in any of the cities in which JFAX currently has a server. How many cities is that?

- (a) Three cities
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2. Which prestigious award did JFAX win in 1996?

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- 1.** You must send us your entry by midnight Friday 31 January 1997.
- 2.** Employees of JFAX, Future Publishing and associated companies, or their agents, and their families, are not eligible to enter.
- 3.** Multiple entries are not allowed.
- 4.** The editor's decision is final, no correspondence will be entered into and there are no cash alternatives. No purchase necessary. **MF**

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1. Post the coupon at left (or a photocopy) to:

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To help us improve the magazine, please answer the questions below. You will be entered into the competition even if you choose not to answer them.

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MacUser review

13th September 1996 ...



... The Olympus Power MOS 330E 3.5in magneto-optical drive is an attractive beast. It is pleasingly compact—about the size of a paperback book—and has matching beige plastic casing ...

... Optical drives have had a patchy reputation in the past but the Olympus MOS 330E does exactly what it says on the box, delivering creditable performance at an exceptional price. It's worth checking that the bureau you use can handle magneto-optical media. If it can, the Olympus drive deserves serious consideration alongside the much hyped alternatives from SyQuest and Iomega ...

MACWORLD



review

October 1996...

... The Olympus Power MO 230 as a low-cost storage device it beats all comers. The cost for storing your first 20,000MB is less than half that of some newer drives ...



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